The effects of direct instruction in phonological skills on L2 reading performance of Chinese learners of English

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Abstract

Phonological skills are found to be highly predictive of children's reading achievement in the English L1 context. Chinese ESL learners are found to be weak in phonological skills because of their logographic L1 background. They often have difficulties in decoding English words, and thus affect their L2 reading development.

L1 training studies showed that improvement in phonological skills will lead to improvement in reading performance. But no similar training study for Chinese ESL learners is found. This thesis reports three studies which aim at (i) confirming the relationship between phonological skills and reading development in the L2 context of Chinese learners, (ii) identifying the effects of phonological skills training on reading performance, and (iii) determining the effective level or age for receiving the training.

The first study compared two groups of Chinese ESL learners, one with phonological skills training in their L1 literacy experience and the other without. Results indicated that better phonological skills had led to more effective L2 reading development of the former group. The second and third studies are phonological skills training experiments conducted to Hong Kong students at primary and secondary school levels. The studies found that training at primary level was effective in improving the students' phonological skills, decoding efficiency and reading performance. However, the phonological skills training at secondary level produced no significant effect.

Results of the three studies together add positive evidence to research related to phonological skills and reading development, especially in the L2 context. Results of the two training studies conducted at different levels indicate that phonological skills training can be effective if given at early stage, to support L2 literacy development and to counteract interference from L1. The participants' age and the length of the programme could be determining factors for the effectiveness of the training.

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1. Introduction

1.1 The nature of reading

At the very beginning of his book, Alderson (2000) points out that "an overview of the study of the nature of reading is impossible...the number of different theories of reading is simply overwhelming: what is it, how is it acquired and taught, how reading in a second language differs from reading in a first language, how reading relates to other cognitive and perceptual abilities, how it interfaces with memory" (p.1). Alderson further comments that "all these aspects of reading are important, but will probably never be brought together into a coherent and comprehensive account of which it is we do when we read" (ibid). There are different fields of enquiry and researchers define reading from different perspectives.

Grabe and Stoller (2002) try to define reading with a single sentence: "reading is the ability to draw meaning from the printed page and interpret this information appropriately" (p.9). But they immediately criticise the above definition as inadequate. The researchers suggest that there are four issues that need to be addressed in the description of the nature of reading. The four issues are: the purposes, the components, the cognitive process, and the differences between L1 and L2 reading. These four issues are inter-related. This thesis is interested in L2 reading (English as a second

language) and will specifically look into the interactions among the four issues which may lead to difficulties faced by L2 readers.

But reading does not always mean the same thing to us. Wallace (1992, p.4) uses four interesting situations to illustrate the various types of reading behaviour in our daily life. First, an optician asks a client, "Can you read this?" In this situation, reading refers to the physical ability of seeing words. Second, a teacher shows a flash card to a child in class and asks "Can you read this?". The teacher probably means "Can you decode the words on the card?", that is, the teacher asks whether the child can read aloud the words on the card. The third case is when an Islamic religious leader asks a congregation of boys to read aloud the Koran. The expected reading behaviour is probably the ability to relate written symbols to sound because some religious text may be learned by recitation. The reader may not recognize the sound-symbol correspondence. The last situation is when the owner of a new computer asks an experienced friend about the instructions in the manual. The meaning of the question "Can you read this?" may become "Do you understand this?". Reading in the final case means interpreting and reacting to a written text. As shown in the above examples, there are different levels of reading behaviour, including seeing, decoding, and interpreting. These are not discrete levels, but one leads to another. As Wallace explains, the eventual outcome of reading depends on the degree

of care and attention that the reader gives to the text, and this decision is often guided by the reading purposes which are linked to situational context and to social expectations.

Along with the social-functional perspective, Carver (1997) proposes that there are five reading "gears", namely scanning, skimming, rauding (natural or simple reading), learning and memorizing, involved when someone is reading, and each gear represents different degrees of processing requirement and serves disparate purposes. The lower reading gears (scanning and skimming) are less demanding as they involve processing at lexical level, whereas the higher gears require accurate and complete text understanding. This view is similar to Wallace's that our reading behaviour is guided by our reading purposes.

Reading purposes can generally be put into three types, although different researchers may propose different categorizations (e.g. Wallace 1992, Urquhart and Weir 1998, Grabe and Stoller 2002). The first is reading for survival (Wallace 1992), which also includes reading to search for simple information (Grabe and Stoller 2002) or skimming, scanning and search reading (Urquhart and Weir 1998). This type of reading mainly refers to quick reading in the environment and involves single words, phrases or short text. This may include reading of street signs, scanning through a telephone directory, skimming for main ideas in a text. The second is reading for

learning (Wallace 1992, Grabe and Stoller 2002). This mainly occurs in academic and professional contexts and involves careful reading (Urquhart and Weir 1998) with which the reader attempts to handle the majority of information in the text, recognize the rhetorical structure and link the text to the reader's knowledge base. When the purpose of reading is for learning, accurate and complete text understanding is more important than speed. The last type is reading for pleasure (Wallace 1992), or reading for general comprehension (Grabe and Stoller 2002). This type of reading is less goal-oriented, as compared to reading for learning, and reading is done for its own sake. An important by-product of reading for pleasure is fluency. Fluent readers develop skills in processing words rapidly and automatically, and in turn can read with speed and ease (Wallace 1992).

The link between reading purposes and reading behaviour bears important implication for reading instruction. Students should develop different types of reading strategies and be able deploy appropriate "reading gears" for different reading purposes. Although reading for pleasure is considered as natural and common in L1 context, students in L2 context do not usually read an L2 text for pleasure. In most cases to them, L2 reading serves the purpose of reading for learning. For example, in Hong Kong and in China, English is primarily learned and used for academic purpose in school. For these L2 students, skills for careful reading are more important than

general reading. On the other hand, because of the demands for processing efficiency, reading for general comprehension may, at times, be more difficult to master than reading to learn. But there is often an assumption that the ability of reading to learn is a more difficult extension of general reading comprehension abilities (Grabe and Stoller 2002). With the purpose of reading for learning and the possible developmental sequence pointed out by Grade and Stoller (ibid), it may be more practical for L2 readers to develop skills for careful reading before general reading, although both skills are important for them to become fluent readers.

1.2 Reading as process and product

In the "simple view of reading" (Hoover and Gough 1990, Hoover and Tunmer 1993), learning to read in English entails mastery of two types of skills: word recognition and linguistic comprehension. Word recognition is the ability to process printed input at the word level, whereas linguistic comprehension is the ability to take lexical information and derive sentence and discourse interpretations (Hoover and Tunmer 1993). Although the researchers acknowledge that word recognition can be accomplished by two mechanisms, one being decoding, which refers to word recognition through phonological coding based on the knowledge of the letter-sound correspondence rules, and the other being direct access, which represents lexical

assess based on printed information, the "simple view" mainly focuses on the effects of decoding. Linguistic comprehension, which is synonymous to listening comprehension here, involves the same ability for reading comprehension, but only that the latter relies on printed information. The two components do not develop in parallel. The assumption is that children develop their comprehension ability through oral language. Before learning to read, they should have well-developed their listening comprehension ability. As linguistic comprehension (listening comprehension) shares the same knowledge base with reading comprehension, children should transfer their listening comprehension ability to reading. But the transfer cannot be effective until they have attained sufficient decoding efficiency. Thus decoding creates a threshold for exploiting the comprehension competence that children possess in oral language for reading. Hoover and Tunmer (1993) reviewed a number of investigations of normal reading and summarise that both decoding and linguistic comprehension contribute to reading comprehension, but the correlation pattern shifts from decoding being strong in early school years to linguistic comprehension becoming the dominant one in the later grades. Thus each of the two components is of equal importance, both are necessary for reading, though neither being sufficient in itself.

The "simple view of reading" suggests that phonological coding for the processing of visual information is central to efficient reading. This view is primarily

built on reading English in L1 context, but decoding efficiency is also found related to the reading performance of L2 readers (Selgalowitz & Hebert 1990; Koda 1988, 1993; Muljani et al. 1998; Rickard-Liow & Poon 1998; Jackson et al. 1999). The implication for reading instruction is that "skill in decoding must be acquired for success in reading alphabetic writing systems" (Hoover and Tunmer 1993 p.15). But unlike oral language which can be acquired through exposure in the context of human interaction, the acquisition of decoding requires formal instruction. Decoding skills, which based on knowledge of the "cipher" (Hoover and Tunmer 1993), that is, conversion rules between visual symbols and their phonological representation, need to be taught explicitly. L2 reading instruction, however, has mostly been focused on comprehension skills / strategies at global level, e.g. making inference, related text to background knowledge, drawing conclusion, evaluating text. Decoding skills are not explicitly taught in EFL reading textbooks (Paran 1996). In fact, "it is quite difficult to find [an EFL reading textbook] that includes any explicit material on decoding at all" (Urquhart and Weir 1998). The lack of direct instruction on phonological decoding could be one of the reasons for the weak decoding skills found among many native Chinese learners of English whose logographic L1 does not provide the environment for these learners to develop sufficient phonological skills for decoding an alphabetic language efficiently .

While the "simple view" is concerned with the gross anatomy of reading, looking at the coarsest level of constituent component, it does not deny that the details of reading are complex, and suggests that these complexities can be grouped within the two components of reading comprehension (Hoover and Tunmer 1993). The view that reading comprehension equals the product of decoding and linguistic comprehension provides a useful framework for reading assessment. However, there is little discussion in the "simple view" about the complex details in the reading process. Although it is possible to view reading both as product and process, "it is this latter knowledge ... which is essential in the teaching of – as opposed to the testing – of reading" (Alderson and Urquhart 1984 p.xix). The researchers explain that "the rationale behind attempts to describe process is that an understanding should lead to the possibility of distinguishing the processing of successful and unsuccessful readers. This in turn should lead to the possibility of teaching the strategies, or process components, of successful readers to unsuccessful ones" (ibid).

In the process of reading, as Alderson (2000) suggests, "many things are happening. Not only is the reader looking at print, deciphering in some sense the marks on the page, 'deciding' what they 'mean' and how they relate to each other. The reader is presumably also 'thinking' about what he is reading" (p.3). The 'many things' that are activated when we read can generally be divided into two sets of

processes or skills, and labeled as "lower-level" and "higher-level" processes or skills. Grabe and Stoller (2002) explain that "lower-level processes represent the more automatic linguistic processes and are typically viewed as more skills oriented. The higher-level processes generally represent comprehension processes that make much more use of the reader's background knowledge and inferencing skills" (p.20). This distinction between high and low-level processes is congruent with the "simple view of reading", but the focuses in the two approaches are different. The former describes more of the operational mechanisms while reading, whereas the latter defines the reading outcome in terms of accomplishments of the two components.

As Alderson (2000) suggests, it is only through an understanding of the process that we can identify the difficulties faced by the readers. This thesis will focus on the reading process of L2 readers with an attempt to identify the possible causes of the difficulties they encounter and look for possible remedies. Between the two levels of processes, the lower level processes are more language specific as these are basically word recognition processes and the way how the script is decoded is closely related to the way it is represented, that is, the nature of the orthography. While L1 reading entails processing of a single language, L2 reading necessitates dual-language involvement (Koda 2005) and decoding problems may occur if the two languages are very different from each other as those L2 readers may need to adjust and adapt their

processing skills from L1 reading to reading a different language. The target group for examination in this thesis is the native Chinese learners learning to read English as a second language. As English and Chinese are very distant in terms of their orthographic nature, the former being alphabetic while the latter logographic, Chinese L2 readers are found to have difficulties in decoding English words (Rickard-Liow & Poon 1998; Jackson et al. 1994; Haynes & Carr 1990; Read et al. 1986). This thesis will look into the decoding difficulties faced by Chinese L2 readers.

1.3 L2 readers

The process of learning to read in L1 is different from the process of learning to read in a second language L2 (Grabe 1991; Koda 1994, 2005). The differences can be found in various aspects. According to Grabe (1991), L1 and L2 reading are different in terms of training background, language processing, and social context. Training background differences refer to the L2 learner's knowledge of the language at the point when reading instruction begins. Unlike L1 learners who have acquired the spoken form of the language in the native environment before learning to read the language, L2 readers often lack the language environment to develop a large store of oral vocabulary and a good sense of grammar when they start reading in L2. Second, language processing differences relates to the differences between the language

systems of L1 and L2 and the transfer effects may cause difficulties for L2 readers. Third, social context differences are the social and cultural factors that influence the L2 learners' approach to reading.

Apart from Grabe (1991), Koda (1994) also discusses the differences between L1 and L2 reading from a psycholinguistic point of view. First, L2 readers often have L1 literacy and reading experience prior to the learning of L2 reading. Such experience may facilitate or inhibit the development of L2 reading. Second, L2 reading implies that the readers have to read in a different language system other than their L1. The distance between the two language systems will have impact on L2 reading performance. Third, L2 readers often have limited linguistic knowledge in L2, mainly due to insufficient exposure to the language. Linguistic knowledge includes knowledge of the orthography, vocabulary, syntactic structure and discourse structure. Koda's observations, with a specific focus on the linguistic differences between L1 and L2 which affect the L2 readers' performance, are very similar to Grabe's discussions of differences in training background and language processing.

To sum up the above discussions, L1 and L2 reading are different in terms of language systems, readers' learning experiences and language environments. The effects and the interactions of these three factors may vary among languages and also from one context to another. The fact that L2 reading involves two languages and the

distance between L1 and L2 will determine the L1 literacy experience will facilitate or interfere the development of L2 reading. In this sense, L2 readers cannot be treated as a homogeneous group as they may come from different L1 background, and the L2 reading difficulties faced by different L1 language groups have to be considered separately. Discussions in this thesis will mainly focus on the difficulties faced by Chinese (L1) learners the learning of English as a second language.

1.4 Research questions

Readers from different L1 writing backgrounds may have developed different decoding skills and strategies to meet the demand of the specific orthographic structure of their L1. For example, readers from a logographic L1 background tend to rely more on visual skills for decoding as the minimal unit of representation in the writing system are morphemes such that meaning can be directly accessed from the visual code. These basic skills which are developed with L1 literacy experience, are usually deep-rooted and resistant to modification and suppression. Readers tend to continue using the same decoding skills when learning to read another language (Akamatsu 1998; Holm & Dodd 1996; Koda 1988; Read et al. 1986). The transfer of L1 processing mode to L2 may interfere with the acquisition or operation of the decoding skills necessary for L2. When the L1 and L2 writing systems belong to

different orthographic types and share little or no similarity, the decoding skills required by the two orthographies will be different. The decoding skills developed in L1 may not be able to facilitate, but instead may interfere with or slow down, the development of a new set of processing skills needed for L2.

According to the Orthographic Depth Hypothesis (ODH) proposed by Frost, Katz and Bentin (1987), languages can be placed on a continuum of orthographic depth according to the regularity of the correspondences between the phonemes and the graphemes in the languages. The shallow orthographies are those with regular or transparent phonological representations, whereas the deep orthographies are those with less regular or opaque phonological representations. Thus, the shallower the orthographies are, the more phonological skills are involved in decoding. Conversely, the deep orthographies would require more visual skills for word recognition as the phonological code in the deep orthographies will be less reliable. In this sense, the visual skills and strategies developed for efficient decoding in deep orthographies (for example, logographic languages) will be less effective for decoding in shallow orthographies (for example, alphabetic languages) where the phonological code plays a significant role for word recognition. Despite the irregularities in the phonological representations in its orthography, English being an alphabetic language belongs to the shallow orthographies and word recognition primarily relies on phonological

decoding. On the other hand, the Chinese orthography is logographic and belongs to the deep end of the ODH continuum. The distance between English and Chinese may create difficulties for the native Chinese learners to learn to read in English as L2. Because the Chinese writing system is morphemic in nature, lexical access does not entail phonological recoding of the script. Chinese learners may not have the context in their L1 literacy experience to develop phonological skills in terms of identifying sounds in words, applying grapheme-phoneme correspondences, and assembling intra-word phonemes for phonological decoding. The different orthographic nature of their L1 and L2 explains why Chinese ESL learners are deficient in phonological skills and why they find L2 reading difficult.

Apart from the weak phonological skills, the transfer of visual decoding strategy used for L1 to L2 further aggravates the L2 reading difficulties faced by Chinese ESL learners and creates a potential roadblock for their L2 reading development. Although visual decoding is also a possible route for word recognition, it is not an efficient route for decoding an alphabetic language like English. Without using phonological decoding, words with similar spelling will look confusing. The L2 learners may find learning of new words difficult, and as their reading vocabulary expands, they may find new vocabulary items confusable with those they already learned. In this case, they may have difficulties learning new words.

This thesis focuses on Chinese ESL learners in Hong Kong and sets out to examine their L2 reading difficulties with the aim of identifying the causes and the possible solutions. There are three research questions that this thesis aims to address:

1. To what extent is the relationship between phonological skills and reading development found in English L1 reading research valid in the L2 context of Chinese ESL learners?
2. What is the effect of phonological skills training in the L2 reading performance of Chinese ESL learners in Hong Kong?
3. What is the desirable level for conducting phonological skills training for Chinese ESL learners in Hong Kong?

1.5 Structure of this thesis

This thesis is divided into ten chapters. The first chapter is an introduction. The next four chapters are literature review, which discuss four major issues related to the development of L2 reading of Chinese learners. Chapter 6 explains the research rationale and the research design used in this thesis. Chapters 7 to 9 report the three studies conducted to answer the three research questions. The final chapter is the conclusion which discusses the significance and implications of the results found in the three studies.

Chapter 2 examines the different models of reading which aimed at describing the reading process from different perspectives. Three major types of reading models are discussed in this chapter, namely, information processing models, the componential models and the connectionist models. The information processing models look at reading as a sequence of information flow, while the componential models aim at identifying the structural components in the reading process. The connectionists describe the process of learning to read in light of the cognitive functions of the human brain and information is processed by means of a matrix of connections among the various processing units. In all the different models, word recognition is central to the reading process. The efficiency of word recognition is a determining factor for the effectiveness of the information processing stages or the functional units.

Chapter 3 then looks into the importance of word recognition and focuses on the concepts of "attention" and the importance of "automaticity" for the efficiency and effectiveness of word recognition. To allow fast and efficient reading, word recognition has to become automatic so that decoding will not require excessive amount of attention, and thus will not interfere with comprehension. According to the dual-route model of lexical access, there are two alternative recognition pathways to access the lexicon: the visual route which access meaning directly from the visual

input and the phonological route which goes from visual input to sound and to meaning by means of spelling-to-sound correspondences. The importance of phonological code in word recognition depends on the extent to which the letter-sound correspondence in the orthography is systematic and consistent. In other words, the shallow orthographies will rely more on the phonological code for decoding than the deep orthographies, at least until words become familiar and can be decoded as sight vocabulary. According to the Orthographic Depth Hypothesis, the nature of the orthography may influence the processing strategies used for word recognition. This implies that when a person's native language and his or her second language have very different orthographic nature, the processing strategies developed in L1 may not be appropriate for L2 and the learner may face difficulties when learning to read the second language.

Results of longitudinal, correlational, and experimental studies in L1 reading (Bradley & Bryant 1983; Lundberg, Olofsson, & Wall 1980; Vellutino & Scanlon 1987; Juel 1988; Chapman, Tunmer & Prochnow 2001) have provided evidence for a causal relationship between phonological skills and reading ability. This relationship may also be reciprocal (Perfetti, Beck, Bell & Hughes 1987) such that while poor phonological skills may hinder the reader's reading development, reading experience may also determine the development of phonological skills. With reference to the

Orthographic Depth Hypothesis and the results of L1 reading research, Chinese L2 learners coming from a meaning-based orthographic background may be deficient in phonological skills due to the orthographic nature of their L1 and the corresponding processing strategies developed, and thus are expected to have difficulties when learning to read English as a second language.

Chapter 4 discusses the reading difficulties faced from L2 learners. As the orthographic nature of a language is influential to the development of the readers' processing skills and strategies for reading in that language, readers from different L1 writing backgrounds may have developed different word recognition skills. Although these skills are developed specifically to cope with the L1 orthographic structure, readers tend to continue using the same skills for L2 reading. In the case of Chinese learners of English, because of the orthographic distance between the Chinese and the English writing systems, they need different decoding strategies to cope with each language. The logographic Chinese writing system requires readers to rely on visual cues for decoding while the alphabetic English orthography necessitates phonological skills for decoding.

To further understand the L2 reading difficulties faced by the Chinese learners, the writing system of the Chinese language is examined in Chapter 5. Chinese has a logographic writing system in that the written symbol represents meaning directly. A

morpheme, which is represented by a character, is a minimal meaning unit in the language. Like any other language, there are thousands of morpheme in the vocabulary, and hence, there are also thousands of individual characters in the Chinese script. As the script is meaning-based, pronunciation is secondary and it can be changed without changing the meaning of the character. The change of pronunciation in the language can be exemplified by the different dialects used in different regions in the country, but all share the same writing system. Therefore, a written text may be read aloud with different pronunciations, but the meaning is still the same to all Chinese readers.

Unlike alphabetic writing systems, which uses a small number of abstract elements to represent the phonemic structure of the language, the Chinese writing system uses a large number of different symbols (known as characters) to represent meaning directly. Each character is a minimal unit of representation, and meaning is directly mapped onto it. Because characters cannot be sounded out letter by letter, character identification has to rely on the graphic information which distinguishes the characters from one to another.

As each character is a distinct entity, learning to read Chinese is essentially learning the characters one by one. The traditional method of teaching and learning to read Chinese is "look and say". Children are told to memorise the phonological code

and the visual code of each character by rote learning. This approach is still used in schools in Hong Kong. In China, however, since the founding of the People's Republic of China in 1949, a romanisation system called "Pinyin" was used to help children read unfamiliar Chinese characters. Pinyin uses the combinations of 25 letters of the Roman alphabet to represent syllables, which are minimal sound units of characters. Pinyin is similar to phonics and helps children sound out characters they have not learnt before. In China, Pinyin is taught intensively in schools before children begin to learn to read Chinese characters. The alphabetic experience helps children develop their phonological skills which are otherwise not expected to develop in the Chinese literacy experience.

The alphabetic experience as well as the phonological skills developed in the process of learning and using Pinyin may possibly be transferred to and thus facilitate the learning of an alphabetic L2, such as English. If this hypothesis is supported, then the implication is that improvement in phonological skills will lead to improvement in L2 reading among Chinese learners of English. To test this hypothesis, three studies were conducted and reported in this thesis.

Chapter Six explains the research rationale and research design used in this thesis. The literature reviewed in the previous chapters can be summarised into two rationales which the research design is based on. First, L2 reading is influenced by L1

reading. Cross-linguistic studies (Green & Meara 1987; Ryan & Meara 1991; Randall 1991; Geva & Siegel 2000) reported that L2 readers tend to transfer decoding skills they developed in L1 to read L2. In the case of Chinese learners of English, they tend to rely on visual skills to read English, which is alphabetic. Moreover, with the lack of alphabetic experience in L1, these L2 learners are weak in phonological skills, and this is also a reason that they have to rely on visual skills. Their phonological deficiency has been a hindrance to their L2 reading development.

The second rationale is that improvement in phonological skills is expected to lead to improvement in reading. In L1 context, longitudinal and correlational studies have found a strong relationship between phonological skills and reading development. Training studies (Bradley & Bryant 1983; Stuart 1999, 2004) have not only added further evidence to the relationship, but also demonstrated that effective phonological training can be used as preventive or remedial measures for delayed phonological development in reading. The same effects are expected to be found in L2 context.

The three research questions listed in Section 1.4 are derived from the two rationales. To answer the three questions, three studies were conducted and results which not only answer the research questions, but also contribute to solving the reading difficulties faced by L2 learners in Hong Kong.

The first study is reported in Chapter Seven. It is a comparison study conducted between two groups of Chinese ESL learners, one from Hong Kong and the other from mainland China (Guangzhou). The two groups shared the same L1 background and are matched on their reading ability. The Guangzhou group have learned Pinyin when learning to read Chinese, whereas the Hong Kong group have not. The learning of Pinyin provides the former group alphabetic experience and such experience is expected to transfer to L2 reading. By comparing the two groups on their phonological skills, decoding skills and reading proficiency, the effect of alphabetic experience on learning to read English as a second language can be identified, and thus answer the first question.

The second study, reported in Chapter Eight, is a phonological skills training experiment developed from the comparison study between the L2 learners from Hong Kong and from Guangzhou. As found in Study I, phonological skills can facilitate the L2 reading development of the Guangzhou group and the implication for the Hong Kong group is that improvement in their phonological skills will cause improvement in their L2 reading too. Hence, Study II is an intervention training programme in phonological skills conducted to students at the same level as the Hong Kong group in Study I.

The training experiment adopted a pre-test-training-posttest control group design, with the experimental group receiving regular training in phonological skills and the control group receiving alternative treatment during the same period. The groups were measured on their phonological skills, decoding skills and reading ability before and after the training period. Results of this experiment can answer the second research question. The experiment being conducted at secondary school level further contributes to the answer of whether there is an age limit or a proficiency boundary for conducting phonological skills training. Thus this study also addresses the third research question.

The third study, reported in Chapter Nine, is an extension of the second study which further explores the training effect of phonological skills on another age group in Hong Kong. This training experiment was conducted in a primary school in Hong Kong. Both the experimental group and the control group are Primary One students. It adopts the same design as the second study and with the same aim as to identify the effects of phonological skills training on the reading development of young ESL learners in Hong Kong. The results will not only contribute further to the answer of the second research question, but also provide contrast to the results found in Study II so that the third question about age level and proficiency level for phonological skills training for Chinese L2 learners can be further addressed.

The concluding chapter, Chapter Ten, looks at results from the three studies as a whole and reviews them in light of the L2 reading difficulties faced by learners in Hong Kong and the possible solutions found in this research. The limitations, especially those created in the classroom situations where the two training studies were conducted, are also discussed. Some of key issues for classroom research are highlighted. Suggestions are made for similar research to be conducted in the future.

2. Models of Reading

As discussed in Chapter 1, reading can be viewed as product or process. While the product view may provide a framework for reading assessment, an understanding of the reading process may give us insight into the difficulties faced by poor readers. Researchers have studied the reading process from different perspectives and have proposed different reading models to describe this process of understanding text and the interaction of the various sources of information the reader used to accomplish the task. These information processing models describe the information flow and the interaction between the lower and higher level processes. The information processing models differ in the sequence of the information flow, mainly in the directions of top-down, bottom-up or interactive. Apart from looking at reading as a sequence of information flow, there are models that focus on identifying the structural components in the reading process or the connections among the various processors that are involved in information processing. In addition, there is also the developmental perspective that describes the different stages of learning to read. These models are reviewed in the following sections with regard to their definitions of reading and implications for reading instruction.

2.1 Information processing models

2.1.1 Top-down models

The best-known top-down models of the reading process are those proposed by Goodman (1967, 1970) and Smith (1971, 1973). The characteristic of top-down models is that reading is controlled by the "top" of the information-processing system (higher-level processes) so that readers use their background knowledge and contextual information from the passage to predict what will come next in the text while reading. The hypotheses will then be confirmed by the reader sampling the visual information from the text. In the process of reading, the reader is engaging in a cycle of making predictions of what will be read next, confirming the hypothesis and making new predictions. Based on his research on young native readers, Goodman argues that reading is a selective process. Good readers, reading at a rapid rate, do not have time to read all the words on a page, but rather, read by sampling the text based on their predictions made by their background knowledge. Goodman maintains that "effective reading does not result from precise perception and identification of all elements, but from skill in selecting the fewest most productive clues necessary to produce guesses which are right the first time" (Goodman 1970: 260). The reading process is characterised as "a psycholinguistic guessing game". Smith's discussion (1971) of the extensive syntactic and semantic redundancy built into natural language

and the ability of readers to make inferences from their background knowledge concurs with Goodman's argument that sampling is effective in the reading process. Efficient readers are thought to pay little attention to the bulk of words in the text because the flow of language follows a predictable pattern. The problems of poor and beginning readers arise from their inability to make full use of contextual information and language redundancy in ongoing sentence processing, resulting in slow decoding and poor comprehension. Smith (1971) maintains that "the more difficulty the reader has with reading, the more he relies on the visual information," and that "the cause of the difficulty is inability to make full use of syntactic and semantic redundancy, of non-visual sources of information" (p. 221).

The obvious shortcoming of the top-down models in describing the reading process is that they do not specify how predictions are actually made, and how the different sources of information are processed and assimilated. It is not clear how the higher level processes influence or control the lower level processes. The top-down models, in this sense, do not make significant contributions to the description of the reading process mainly because of their lack of precision (Rayner and Pollatsek 1989). On the other hand, the top-down assumption about the readers' prediction skill while reading as an explanation of reading success or failure could be fallacious. Stanovich (1980) challenges the top-down view with constraints on real-time reading. "It seems

unlikely that a hypothesis based on complex syntactic and semantic analyses can be formed in less than the few hundred milliseconds that is required for a fluent reader to recognize most words" (p.36).

Eye movement research has demonstrated that predictions cannot be easily made at least at word recognition level. Good readers do not guess or sample texts, but identify words precisely and rapidly from text. An important study by Rayner and Bertera (1979) demonstrated that efficient reading is dependent on detailed sampling of the visual information in the text. They controlled the mask size in their experiment to determine the amount of information which readers need to identify the meaning of words. They found that the loss of one letter in the foveal vision on each fixation reduced reading speed by 50 percent and also increased almost 50 percent of the error rate in the subjects' verbatim reports of the sentences they read. Their findings clearly show that it is hard for readers to make predictions without sufficient information extracted from text. Findings from Rayner & Pollatsek (1989) on eye fixations also show that text is sampled in a fairly dense manner during reading and most of the words in a text are fixated, either directly in foveal vision or to a certain extent in parafoveal vision. Results from eye-movement research thus indicate that fluent readers sample the visual array rather completely, even when reading fairly predictable words, and it is not true that skilled readers rely less on graphic cues than

less-skilled readers. It is not that the skilled readers rely less on visual information, but that the stimulus-analysis mechanisms of the good reader use less capacity because their decoding skills are more efficient. They use less capacity not because they rely on contextual information, but because their stimulus-analysis mechanisms are so powerful and automatic (ibid). The researchers thus suggest that decoding rather than prediction skills help to explain reading success or failure. Children read slowly not because they are not using context to make predictions, but because they are decoding inefficiently.

The top-down models have been trying to illustrate the strong procedural preference readers of all ages have for relying upon the meaning (as opposed to the graphic and graphophonemic) cues available in the printed message. Readers are assumed to engage in a process of active construction of meaning based on their background knowledge and contextual information. The influence of the top-down models is widespread in reading instruction. Reading instruction based on the top-down models puts emphasis on using context to make predictions on the text. It is believed that background knowledge and knowledge of text organization can help readers make accurate predictions from the text which will in turn facilitate comprehension (Carrell 1983; Steffensen & Joag-Dev 1983; Block 1992). In L2 context, the top-down approach has been influential on reading instruction. Paran's

review (1996) of major ELT books on reading and teacher training course books confirms the overwhelming influence of the top-down theory in reading. Much emphasis has been placed on the importance of helping learners make use of the context and background knowledge to make predictions from the text.

A major problem of the top-down models in reading instruction is that they confuse the role of language prediction skill in learning to read and in fluent reading. The strong preference in the models for reliance on existing syntactic and semantic knowledge in the reading process may only reflect the role of prediction in fluent reading, it does not necessarily follow that prediction skill plays a central role in learning to read (Tunmer 1992). It is doubtful whether prediction skill will be reliable and useful for beginning readers, especially young readers, when their linguistic knowledge (both syntactic and semantic) is yet to be fully developed. There is also little background knowledge that they can make use of. The distinction between the processes involved in skilled reading and the processes involved in becoming a skilled reader has been overlooked. "It is possible that the linkages between processing operations at the initial stages of reading acquisition are quite different from what they are at more advanced stages" (Stanovich 1992: 309).

Besides, as discussed in Chapter 1, there are different types of reading behaviour which are determined by the different reading purposes. The reading behaviour of

search reading or leisure reading is different from that of reading for learning. While readers may sample visual information in search reading or leisure reading, they need careful and complete reading when the purpose of reading is to learn from the text, e.g. reading for academic purposes. The top down models may describe the former types of reading behaviour but not be able to account for the latter type. For L2 readers, careful reading is more important and useful for them as the primary purpose of L2 reading is usually to learn from the text. Reading instruction based on the top-down models with emphasis on making predictions will not be sufficient for meeting the needs of L2 readers. They need training in careful and efficient decoding as well.

2.1.2 Bottom-up models

The basic idea of the bottom-up models, opposite to the top-down view, is that visual information is initially sampled from print and the information flows through the processing system in a series of stages with little influence from higher level processing strategies. Gough (1972) proposes a comprehensive model (Fig. 2.1) which attempts to describe the reading process starting from the time when the eye first fixates on the printed letters to the time that meaning is derived from the visual information. Gough's assumption is that all letters in the visual field must be accounted for individually before meaning is assigned to any string of letters. In his

model, visual input enters the "icon" which holds the information while it is scanned by a pattern-recognition device, and then decoded by means of a "code book" of grapheme-phoneme correspondence rules. The character strings are mapped onto their phonemic representation and served as input to the "librarian" which matches up the phonemic strings against the lexicon. The derived lexical entry is held in "primary memory" until four or five entries are processed at one time by a comprehension device called "Merlin" which applies syntactic and semantic rules to determine the overall meaning (deep structure) of the entries, and this is finally placed in TPWSGWTAU (The Place Where Sentences Go When They Are Understood). In this model, the information processing system operates serially and reading is initiated with input from low-level sensory signals obtained from each eye fixation with information processed at discrete stages and passed on from one stage to the next level above. The higher-level processes cannot affect the lower level processes. The information flow is totally "bottom up".

Fig. 2.1 Gough's model of reading process (1972)

The focus of reading research from the bottom-up perspective is that the lower level processes, in particular, word recognition, are foundational in the reading process. The meanings activated by the successful recognition of words are the building blocks for subsequent comprehension processes. Despite the fact that Gough's model is explicit enough to be tested at various stages, there are still problems and ambiguities found in it. The major criticism is its lack of interaction or feedback among the different levels of processing. "The reading process is strictly letter-by-letter, word-by-word analysis of the input string. There is no provision for

interaction within the system" (Rumelhart 1994). For example, the sequential processing system described in the model does not account for any possible influence on eye movements from other aspects of processing such as background knowledge and contextual information. Besides, the model has been criticized for its lack of flexibility such that the reader has no choice of operations or strategies to use in different reading tasks and has little freedom to vary the sequence of operations in any way (Mitchell 1982; cited in Rayner and Pollatsek 1989: 467).

2.1.3 Interactive models

Rumelhart (1977) proposed the first interactive model as an alternative to the serial flow-chart of the bottom-up models. According to Rumelhart (1977), linear models which pass information along in one direction only and which do not permit the information contained in a higher stage to influence the processing of a lower stage contain a serious deficit. They are not able to account for a number of occurrences known to take place while reading. For example, there are cases that perception and analysis of letters are influenced by the reader's syntactic, semantic and orthographic knowledge, as well as contextual cues from the environment and the schemata. In Rumelhart's model, information from syntactic, semantic, lexical, and orthographic sources are providing input simultaneously to the "Pattern synthesizer".

The mechanism that holds the information, evaluates the hypotheses, and makes decisions to determine the most probable interpretation is the "message center". By means of separate knowledge sources and a "message center" which permits these sources to communicate and interact with others, the higher-order stages are able to influence the processing of lower-order stages.

The model places emphasis on highly interactive parallel processing mechanisms which account for the influence of context and the reader's background knowledge (e.g. syntactical, semantic, lexical and orthographic knowledge) on the reading process. Readers are assumed to be drawing upon the different knowledge sources before settling upon an interpretation of the text. The Interactive Model of Reading developed by Rumelhart (Figure 2.2), suggests that all different information sources enter top-down or bottom-up interact simultaneously to produce a "most probable interpretation" of the graphemic input.

Fig. 2.2 A Stage Representation of an Interactive Model of Reading (Rumelhart 1977)

Although Rumelhart's model may explain the interactions between the higher and lower level processes, it does not describe how the interactions take place, nor does it account for individual differences in reading fluency. Stanovich (1980; 1984) develops an interesting twist to the Rumelhart's model. He integrates the concepts from both top-down and bottom-up approaches and attempts to incorporate what is known about skilled and unskilled reading into his "interactive-compensatory" model. The key concept is that "a process at any level can compensate for deficiencies at any other level" (p.36). For example, weakness in orthographic knowledge can be compensated by strength in other knowledge sources, say, context, background or syntactical knowledge. In other words, "the compensatory assumption states that a deficit in any knowledge source results in a heavier reliance on other knowledge sources, regardless of their level in the processing hierarchy" (Stanovich 1980: 63).

To support his model, Stanovich (1984) reported results of a developmental study conducted by his research team (West & Stanovich 1978) which compared the reading performance patterns of fourth-grade, sixth-grade and adult readers. The subjects were asked to name a target word that had been preceded by either an incomplete sentence that was congruent with the word, an incomplete sentence that was incongruent with the word, or simply by the word "the" (no context). They found the overall contextual effect diminishes as developmental level increases. While the fourth-grade and sixth-grade readers took longer naming times in the incongruent-context condition than in the no-context condition, there was no difference found among the adult readers in these two conditions. The results illustrate that good readers rely less on contextual information while reading. Good readers rely less on contextual effects as their knowledge sources for the lower-level processes are strong; whereas poor readers who may be both inaccurate and slow at word recognition rely more on contextual information as compensatory measures for achieving comprehension. When combined with an assumption of compensatory processing, interactive models provide a better account of good and poor readers.

Stanovich has been careful to specify that there are different types of context effect which tap onto the different levels in the processing system. For example, context can act to speed up ongoing word recognition during reading, or context can

be used to facilitate the memory and comprehension of text. It is the former type of context effect that the Stanovich and his research group were interested in. The discussion of the Interactive-Compensatory model is focused on word reading, rather than text comprehension.

At word level, the context effect is limited. Perfetti (1992) further examined the nature of interaction among the different components of the reading process, and proposes the Restricted-interactive Model which describes the constraints on interactions. He distinguishes the autonomous and the interactive components in word reading. On one hand, word recognition incorporates the interactive connections among representations of words, letters and phonemes; but on the other, it is also autonomous in the sense that influences from outside the lexicon are not widely allowed. It is believed that the intra-lexical information, that is, information within the lexicon such as links between letters and words, letters and phonemes, and phonemes and words, are permitted to interact without constraints. He cited results of the priming experiment conducted by Kintsch and Moss (1985) that there was no priming effect in a lexical decision task when words used as primes were thematically related to the target word through the discourse but were not lexically related to it. The results support the claim that nonlexical knowledge, such as contextual information, general knowledge and expectations, has little or no influence on the initial access of a word.

There are three constraints on contextual influences: i) The early stages of word activation include a general non-selective set of semantic and syntactic attributes. Prior context does not pre-select the semantic value of a word at lexical level, but rather influences the choice of meaning at the next stage of the reading process (i.e. comprehension); ii) general knowledge or the theme of a discourse does not influence the early stages of lexical access; iii) in normal skilled reading, lexical access is so rapid that contextual influences are minimal. This argument is consistent with Mitchell and Green's (1978) conclusion that reading was too rapid for context effects. Word identification occurs too rapidly in skilled reading for context to have much advance effect on meaning selection. The discussions of the constraints of context effect at word reading level highlight the importance of accurate and efficient word recognition for reading. This view is opposite to the claims in the top-down models that readers sample visual information from text based on the predictions about the text.

In line with the information processing approach, LaBerge and Samuels (1974) propose their reading model with the focus on "attention" which represents the resources required for text processing. There are five main components in the model. Apart from "attention", there are "visual memory" (VM) where the visual information from the text is processed; "phonological memory" (PM) where the audio

representations of the visual codes are processed; "episodic memory" (EM) which records contextual details; and finally, "semantic memory" (SM) where knowledge of all kinds is stored. Figure 2.3 shows the LaBerge and Samuels model of information processing.

Fig. 2.3 LaBerge and Samuels Model (1974)

The model provides very detailed illustration of the information flow in the reading process. The model is interactive in the sense that information from each of the four memory components can influence the processes in the other components. Information within the same memory component, in terms of the different codes, may

interaction with each other. Episodic Memory which processes and records background and contextual may influence any of the other three memory components. But the heart of the LaBerge-Samuels model is "attention" which the researchers use to explain the differences between beginning reading and fluent reading. Attention is needed for both decoding and comprehension in the reading process. But the amount of attention one has is limited in a specific unit of time. How much attention is required by decoding and comprehension depends on the reader's decoding skill, familiarity with the words in the text, as well as the topic and density of idea units found in the text. For beginning readers, decoding is a difficult task and demands much attention. Consequently, the combined demands of decoding and comprehension may well exceed their attention capacity such that the two tasks cannot be done simultaneously. To overcome the problem, the readers use the attention switching strategy such that they put their attention on the decoding task and then switch attention to comprehension. The process, however, "is slow, laborious, and frustrating" (Samuels 1994: 892). On the other hand, skilled readers can perform the decoding task with little or no attention, leaving the resources for comprehension, so that both tasks can be done simultaneously and the reading process can become more efficient. When a task can be done without attention, the task is being done automatically. The attention theory and the concept of automaticity have practical

implications for reading instruction, and offer a different perspective on common reading problems. The model helps to explain why some students read slowly, and why they can recognise words accurately but not comprehend them with ease (Samuels 1994).

The reading models based on human information processing discussed above can be characterised as attempts to describe and explain how information from print is taken in and transformed into meaning. Each model provides a different perspective on the reading process. Goodman views reading as a process of the readers' active construction of meaning based on their existing knowledge. Gough's strong assumption of the reading process starting from letter identification offers a different perspective of reading away from the top-down models while Rumelhart's interactive model illustrates the dynamics of information flow in the human mind. Stanovich's interactive-compensatory theory adds further flexibility to the interactive model and explains the different behaviour of good and poor readers in terms of decoding skills, and the LaBerge and Samuels model brings out the important concept of attention and highlights the importance of automaticity in decoding which enables fluent reading. In general, "there has been a fierce debate ... between reading theorists who insist upon the criticality of efficient word recognition and those who believe just the opposite: that visual information contained within words is only occasionally sampled by the

reader to construct meaning from text" (Juel 1999: 201). The reason this debate became so intense is that it is often theoretically tied to methods of reading instruction. Research findings showing the importance of efficient word recognition for reading success call for direct instruction in decoding as opposed to the over-emphasis on strategy instruction. This "message" (ibid) is not only helpful to L1 readers, especially beginning readers or less skilled readers, but also L2 readers who are less skilled by nature.

Most of the models cited above are based on L1 reading. Researchers attempt to describe the process of reading English as the native language. It is by far not clear whether the same processes take place when L2 readers are reading. Ridgway (1994) argues that there should be one highly generalised model to account for all forms of reading, including foreign language reading. His model is a synthesis of the existing information processing models but pinpoints the difficulties in foreign language reading. It captures the salient characteristics such as being interactive-compensatory, knowledge can be activated at different levels through connections, lexical items are processed with a linear approach, the importance of automatisation and capacity is emphasised, there is also a focus of attention, purpose, and the option of abandoning reading. He uses a flow-chart to illustrate the reading process in general.

Fig. 2.4 A Flow-chart of the Reading Process (Ridgway, 1994)

The perception of a word will first be checked by WEM (word encoding mechanism) which represents recognition of feature, letter, morpheme and phonics and if the word is familiar, it will be processed for lexical access which is represented by the "Comprehension Operator". If the word is ambiguous, it will go through a conscious cognitive process called "Contention Scheduling" before lexical access. The ambiguous word may require the intervention of "attention" to decide whether special strategies such as guessing, predicting, and looking the word up in a dictionary (all contained in "Problem Space") need to apply or the word should simply be ignored. There are also words with no WEM. These are unfamiliar words. They will immediately capture attention to go through the same decision making process. "Chunking" is the final stage which all newly processed and previously learned information will be combined to form interpretation at text level. There is also the

option of abandoning reading, and in such case, the reading process fails. The model is claimed to be the general framework for all forms of reading. "The main differences between L1 and FL reading are clearly in the need to learn and automatise the encoding of word-percepts, and in the degree of access to knowledge afforded by lexical items" (Ridgway 1994: 72).

2.2 Connectionist Models

Connectionist theories attempt to describe the process of learning to read in light of the cognitive functions of the human brain and assume that a word's representation is distributed over a matrix of connections among the various processing units. Instead of each unit occupying a specific higher level node, there is no hierarchical structure among the units. Seidenberg & McClelland (1989) built their model of lexical processing known as parallel-distributed-processing model (PDP), on the basis of computational simulations to replicate the interactions of the processing units. The model consists of sets of orthographic, phonological and semantic units, and processing is mediated by connections among the units. The power of the connectionist model comes from the fact that there is no pre-defined sequence or stages of interaction among the different knowledge sources. It is neither top-down nor bottom-up in nature. All units are connected and simultaneously active and

interactive to issue and accommodate information to and from one another. The connections initially have random weights, that is, there is no dominance of one set of units over the others. The coordination and cooperation of all units, however, are shaped by the existing information stored in the units, which represents the reader's knowledge and experience. With repeated patterns of activity, stronger interrelations will be developed for particular connections and thus produce increasingly more fluent reading. In this sense, the model learns from experience. It is a model of the learning process.

The computational model constructed by Seidenberg & McClelland is an attempt to explain the cognitive process of learning to read in the human brain. The contribution of the model to the understanding of reading is mainly its assumption that learning progresses as the learner gains experience in responding to the relationships among patterns or events, and reading fluency and speed will build up as the connections between the processing units become stronger.

Adams (1990, 1994) adapts the connectionist theory to further explain the differences between skilful and beginning readers in terms of the different strength of connections among "processors". Her discussions are primarily focused on word recognition. Her model, cited in Fig. 2.5, consists of four interconnected "processors", namely, "Orthographic Processor", "Phonological Processor", "Meaning Processor"

and "Context Processor". Within each of the "processors", knowledge is represented by many units that have become linked to, connected with, or associated with one another through experience (Adams 1994).

Fig. 2.5 Adams Model of the Reading System (Adams 1994)

The more frequently a pattern of activity has been brought to mind, the stronger and more complete will be the bonds that hold it together. In this model, the Orthographic Processor alone receives information directly from the printed text. Skilful readers visually process nearly every letter and word as they read. Through experience, with the learned associations between and among individual letters, skilful readers are able to respond to frequent words and spelling patterns easily and holistically. These familiar words are read as sight vocabulary.

The inter-letter associations processed in the Orthographic Processor also relate to the very important concept of orthographic knowledge which explains poor readers often make mistakes in reporting the order of the letter in words they read, whereas skilful readers seldom do so. Orthographic knowledge refers to the knowledge about the likely and unlikely sequences of letters in words (Adams 1994: 846). This knowledge is captured in the learned associations between them. In the very course of perception, therefore, this knowledge serves to corroborate and compensate for the visual system for the transmission of letter order, which is often confusing in alphabetic languages. For example, in English words are formed by the combination of 26 letters. The combinations may look similar in many cases. The knowledge about permissible or unpermissible sequences or combinations, which is gained from the experience of reading, will help the reader to process the visual input more quickly and accurately. Insufficient orthographic knowledge may explain the prolonged and repeated fixations noted among young or poor readers. Orthographic knowledge is also related to the reader's ability to articulate the letter strings. Adams (1994) comments, "for any language that is basically alphabetic, strings of speech sounds that can be co-articulated tend to be represented by frequent sequences of letters" (p. 867). The permissible or unpermissible sequences are often determined by whether the letter strings are pronunciable or not. The ability to read aloud letter strings with help

the reader to develop orthographic knowledge more readily. If readers are not able to read aloud the words, they will be slow in building up their orthographic knowledge.

Adams (1994) also discusses the importance of the Phonological Processor at length. In the model, the Phonological Processor is connected to both the Orthographic Processor and the Meaning Processor. The activation of a word's pronunciation, connected to the visual stimulation received from the Orthographic Processor, will provide a means for identifying words that, though visually unfamiliar, are in the reader's speaking or listening vocabulary, and will in turn, evoke the meaning of those words. For skillful readers, because of their established spelling-sound associations, phonological translations will become automatic, and therefore, many words with limited visual familiarity will be recognized with the ease and speed required for fluent reading comprehension. The Phonological Processor also supports visual learning by providing feedback to the Orthographic Processor, and helps young readers to organize, consolidate and remember spelling patterns visually.

Apart from the phonological route, the model also allows direct connections between the Orthographic and the Meaning Processors. Words can be recognized and understood without phonological translation. But this visual route can only be effective when words are familiar, that is, when strong connections have been built

between the visual input and its meaning. As Adams (1994) maintains, the vast majority of print consist of relatively few, very frequently occurring words. The vast majority of distinct words in print are relatively infrequent. Therefore, the capacity for rapid, easy phonological translation is essential for fluent reading. She further stresses that "insensitivity to the sounds of speech and difficulties in relating them to letters and spellings are found to be the single most frequent hole in the reading and language abilities of disabled readers of all ages" (Adams 1994: 858). The consequence is slow and effortful reading. According to the learning nature of the connectionist models, the difficulties can be improved by giving special instruction to such readers on breaking words into sounds and relating sounds to spellings. Adams concludes that "relative to the overall literacy challenge, learning to recognize words really is a very small component. Yet it is also wholly necessary.... Deep and ready working knowledge of letters, spelling patterns, and words, and of the phonological translations of all three, are of inescapable importance to both skilful reading and its acquisition – not because they are the be all or the end all of the reading process, but because they enable it" (ibid).

Adams' reading model is primarily a model at word recognition level. The connections between the Orthographic Processor and the Phonological Processor are crucial to fluent reading, especially at word level. The strength of such connections

will determine the efficiency of word recognition. The significance of this model is its learning nature such that the connections can be built with reading experience or special instructions or training. The model thus suggests phonological training as a possible way to facilitate beginning readers to develop decoding skills and to help poor readers to overcome their decoding difficulties. Although Adams' discussions are based on L1 reading, the learning nature of her model and implications for phonological training can also be applied to L2 reading context.

2.3 Componential models

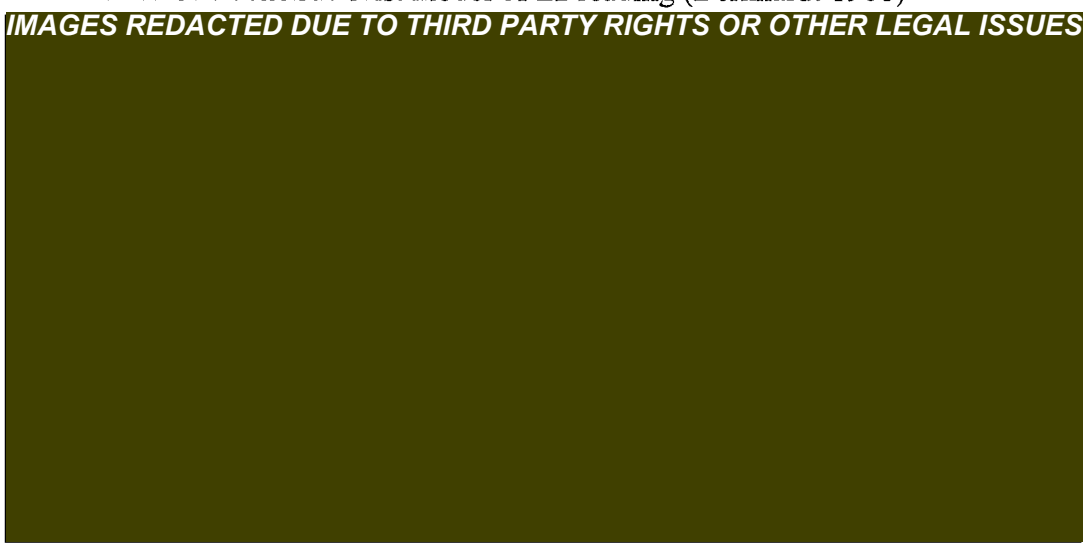
The focus of interest in the information processing models and the cognitive models discussed above is on the reading process, which includes how information flows, and how learning to read takes place. Another strand of research begins to look into the components which enable reading comprehension to take place. The focus of interest is also shifted from looking into the process of reading to the product of reading (Paran 1996), and research subjects are expanded to include not only L1 readers but also L2 learners. The componential approach is popular in L2 reading research mainly due to the preoccupation of the field with developing the learner's reading ability and finding solutions for their reading problems. Coady (1979) describes L2 reading with three components: Process Strategies, Background

Knowledge, and Conceptual Abilities. These three components are interactive in the reading process. According to Coady, there is a relative change in use of strategies over time. Beginning readers focus on process strategies (e.g. word identification by means of grapheme-phoneme correspondences), whereas more proficient readers rely on conceptual abilities and shift attention to textual and contextual meaning, and make use of their background knowledge. The focus of Coady's theory is the shift of strategy use as a reader moves along the proficiency levels of reading.

Bernhardt's contructivist model of reading in a second language (1986) was developed in line with Coady's theory. There are six components in Bernhart's model (Figure 2.6), namely, phonemic/graphemic features, metacognition, syntactive feature recognition, intratextual perceptions, word recognition, and prior knowledge, which determine comprehension. The model contains both text-based and extratext-based components in L2 reading. She stresses that the components are "interactive" and "multi-dimensional". "The model is circular and interactive with one or a combination of components influencing one or a combination of components" (Bernhardt 1986: 105). Being circular and interactive, it is not possible to determine where the cycle begins. Different readers may read in different ways with regard to text types and reading purposes. This flexibility, however, is also the model's major weakness. It

does not tell much about how the interactions operation, and is very difficult to make experimental predictions based on it.

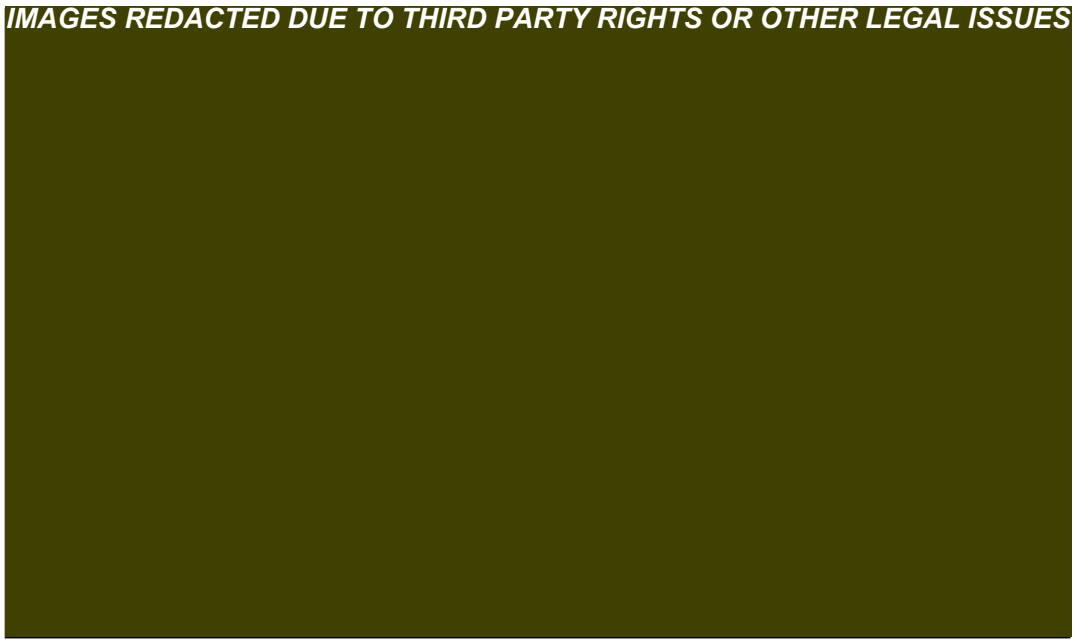
Fig. 2.6 Bernhardt's constructivist model of L2 reading (Bernhardt 1986)



Based on her research data collected from L2 learners learning German and Spanish as a second language, Bernhardt (1991) generated a theoretical distribution model of the five factors in L2 reading, namely, Phono-graphemic Features, Word Recognition, Syntax, Background Knowledge and Perceptions to further illustrate the interactions among the components or factors in the process of learning to read. Her multifactor theory is based on the assumptions that second language reading abilities develop over time and the reading factors interact among each other. Using error rate as indication of reliance on the specific reading factor and by comparing readers at different proficiency levels, the distribution model, shown in Figure 2.7, illustrates the change of strategies in the reading process as reading proficiency develops.

Fig. 2.7 Bernhardt's theoretical distribution model of reading factors in L2

(Bernhardt 1991)



Instead of looking into interactions of the processing units in the reading process, the componential models are interested in identifying the different skills and knowledge base that contribute to the reading outcome. Bernhardt's multi-dimensional contructivist model which includes both processing skills and background variables provides a flexible and yet comprehensive framework which allows analyses and comparisons of different components at a time. The distribution model contributes further to the understanding of the shift of skills and strategies readers used at different proficiency level. Both models highlight the importance of word recognition as a key component in reading, especially among readers with low proficiency. The models are built upon research data from L2 learners, but word

recognition skills are not only important for L1 readers but also for learners in L2 context, although it has to be noted that the L2 learners in Bernhardt's research were not learners of English. Nevertheless, the two L2 involved (German and Spanish) are both alphabetic languages, and the results can be generalised to some extent to the learning of English as a second language. Bernhardt's componential model allows interactions between word recognition and other components which are related to the readers L1 background, e.g. differences in phonemic / graphemic features between the readers L1 and L2, readers' prior knowledge and experience in L1 and L2. Thus the model provides a good starting point for the reading development of specific language groups.

2.4 Developmental stages of learning to read

Instead of proposing a reading model, Ehri (1994) takes the developmental perspective on reading and identified four phases in the development of learning to read at word level. Each of these phases are characterized by the different strategies readers used for reading words. As the readers develop from one phase to another, their strategies for reading words also change.

The first phase is called "logographic" phase. Readers in this phase use visual cues for reading. They form an association between a written word and its

pronunciation or meaning. Logographic readers in this phase remember words on a one-to-one basis between the visual image of a word as a whole and its pronunciation or its meaning. According to Ehri (1994), logographic readers may face some difficulties in word recognition. First, the associations formed between visual cues and words are unsystematic and arbitrary, and therefore difficult to remember. Second, logographic readers lack any means of reading unfamiliar words accurately. They may use context to guess or may easily mistake unfamiliar for familiar words.

The second phase is called "novice alphabetic" phase. When readers begin to read words by processing letter-sound relations, they move into the "alphabetic" phase. But there is a transitional phase in which novice readers may only know some letter-sound relations but are not yet able to phonologically recode nonwords. They use partial letter-sound correspondences to process print. Only some of the letters seen in the spellings, mostly the initial and final letters, are connected to sounds detected in pronunciations, and also form the access route into lexical memory. Novice alphabetic readers may recognize familiar words by connecting some of the letter sounds to the word's pronunciation, but they do not have the blending skills to phonologically recode unknown words.

The third phase, the "alphabetic" reading phase, begins when readers can phonologically recode written words into pronunciations. This phase is also called

"cipher reading", which requires mastery of the system of rules by which letters and letter sequences map onto phonological forms. One advantage of alphabetic reading is that readers have a means for reading unfamiliar words accurately. To help readers advance from the second phase to this alphabetic phase, explicit phonics instruction may have much value in terms of teaching decoding skills.

In the fourth phase, that is the "orthographic" phase, readers can make use of grapheme-phoneme correspondences and orthographic knowledge to read words. Readers in this phase consolidate grapheme-phoneme patterns of words they came across. As they become experienced readers, they may accumulate knowledge of the likely and unlikely sequence of letters in words when they phonologically recode different words with the same spelling patterns. With the use of grapheme-phoneme conversion (GPC) rules and orthographic knowledge, readers in this phase may not only detect spelling patterns and orthographic structures in familiar words, but also read new words by making analogy to the known patterns and structures.

The developmental profile described by Ehri on reading words outlines a qualitative shift in the type of information the child uses to identify unknown words. is based on the development of L1 readers. As the reader becomes more experienced and skillful, there is shift of decoding strategy from visual to phonological. The development profile primarily describes the reading development of L1 readers, but it

also gives reading teachers, both in L1 and L2 context, insight on the necessity of phonological instructions for helping children to read efficiently.

2.5 Summary

In the models reviewed above, each of them takes a different perspective on reading. They all contribute to answering the question of "what is reading?", but each with a different focus, and with which they attempt to explain the differences between skilled and unskilled readers. The sequential models, including the top-down, bottom-up and interactive models, focus on the directions of information flow in the reading process that leads to comprehension. The LaBerge and Samuels model highlights the importance of "attention", which represents the processing resources in the human mind, and the concept of automaticity in decoding, which provides practical implications for reading instruction. The connectionist models look into the associations and interactions between different functional units in the reading process, and attempt to explain the differences between skillful and unskillful readers in terms of the strength of connections among the different information processing units. The connections can be built up by reading experience, and thus the models can illustrate the developmental process of reading. The componential models, which are mainly developed for L2 reading, identify the factors that interact with each other in L2

reading. The focus is not the connections but the function of the factors and their influence on reading performance. The identification of components allows researchers and reading teachers to pinpoint at specific problems in the reading process and thus enables them to make suggestions and take remedial actions. Lastly, apart from descriptions on the reading process, there is another perspective which focuses on the developmental stages of learning to read. Ehri's description of the four phases of learning to read concentrates on the development of decoding skills at word level and highlights the importance of phonological skills and orthographic knowledge for efficient word reading.

In the reading models reviewed above, the component of word recognition is central to the reading process. The efficiency of word recognition is the determining factor for the effectiveness of the information processing stages or the functional units. In the reading process, graphemic input is always the starting point. If the visual input is not accurately and quickly processed, the other components or units will not be able to function properly. In the following section, the importance of word recognition will be discussed.

3. Word recognition

3.1 The importance of word recognition

Gough (1984) begins his review chapter on word recognition in the first volume of the *Handbook of Reading Research* with a positioning statement that "word recognition is the foundation of the reading process" (p.225). Stanovich (1991) further explained the central role of word recognition: "while it is possible for adequate word recognition skill to be accompanied by poor comprehension abilities, the converse virtually never occurs" (p. 418). While it is possible for a person to have poor reading comprehension ability despite adequate word decoding skills, it is highly unlikely that excellent reading comprehension will be observed in face of deficient word recognition skills. Therefore he concludes that "efficient word recognition seems to be a necessary but not sufficient condition for good comprehension in adults, just as it is in children" (p.419). The importance of word recognition in the reading process is also pointed out by Evans and Carr (1985:342), "If print-specific encoding mechanisms send incomplete or erroneous data to the language comprehension processes, what could result but an incomplete or erroneous understanding of the text?"

As shown in both the L1 and L2 reading models reviewed in the previous chapter, the efficiency and effectiveness of word recognition are critical to reading achievement. The information processing models reported in Chapter 2 (Gough 1972; Rumelhart 1977; Stanovich 1984; Perfetti 1992; also Just and Carpenter 1987) as well as eye-movement research (Rayner & Bertera 1979; Rayner & Pollatsek 1989) show that the higher level processes or the comprehension stage are dependent on the output of word recognition. This dependency explains why, in analyses of individual differences, efficiency of word recognition is a necessary condition for good comprehension Stanovich (1991: 419).

To allow fast and efficient reading, word recognition has to become automatic. Stanovich (1991) explains the concept of automaticity in terms of the original discussion in LaBerge and Samuels (1974):

> *During the execution of a complex skill, it is necessary to coordinate many component processes within a very short period of time. If each component process requires attention, performance of the complex skill will be impossible, because the capacity of attention will be exceeded. But if enough of the components and their co-ordinations can be processed automatically, then the loads on attention will be within tolerable limits and the skill can be successfully performed.* (p. 293)

As discussed in the previous chapter, "attention" is central to LaBerge and Samuels' model. Samuels (1994) further explains that "attention may be thought of as the effort or energy used to process information" (p. 819). The human mind, like the fastest computer, has limited capacity to process information. Although in LaBerge

and Samuels model, attention can be directed to any of the four components in the reading process, i.e., visual memory (VM), phonological memory (PM), episodic memory (EM) and semantic memory (SM), it is important that decoding becomes automatic and requires little attention so that the energy can be saved for comprehension. According to the automaticity theory, efficient word recognition is crucial for fast and fluent reading. Samuels (1994) points out that the automaticity theory can explain why some students can recognise words accurately but not comprehend them with ease. One possible reason for this problem is that the decoding requires so much attention that it interferes with comprehension. As decoding and comprehension are interrelated tasks that both require processing space, the more space consumed by decoding, the less processing space available for comprehension. It is thus important for lower level processing skills which involve primarily visual information extraction to become automatic so that more attention can be given to higher level process which demands more capacity of attention in order to increase reading fluency.

The importance of automatic word recognition in the reading process is also found in L2 reading. Segalowitz and his colleagues conducted a series of studies (Favreau & Segalowitz 1982, 1983; Segalowitz & Hebert 1990) on the reading speed of fluent bilinguals and found that the majority of them read significantly more slowly

in their second language compared to their first language. The second language reading rate is reported as 60-70% of the first language reading rate (Favreau & Segalowitz 1982). The concept of automaticity was adopted to explain the slower reading rate in L2 of the fluent bilinguals. Favreau & Segalowitz (1983) also found that while all subjects showed automaticity effects in primed lexical decision tasks in their L1, those who read L2 more slowly than L1 showed significantly weaker effects in their L2. In contrast, those who read equally fast in the two languages showed similar effects in their L1 and L2. Summing up their experiments, the researchers conclude that "the slower L2 reading in otherwise advanced bilinguals was found to be related to reduced automaticity of word recognition in L2" (Segalowitz, Poulsen & Komoda 1991:19). Along the same line of research, Segalowitz and Hebert (1990) add to the findings that the relatively slower second language reading of some fluent bilinguals is associated with deficient use of phonologically coded information in memory. Although Segalowitz and colleagues were interested in reading speed, their findings are in line with the attention theory that lower level processes need to be automatic in order to free processing capacity to higher processes. In other words, automatic word recognition will lead to better comprehension and thus the reading time can be shortened. The research of Segalowitz and colleagues was conducted with

L2 readers, their findings suggest that discussions of attention in reading process and automatic word recognition in fluent reading are also applicable to L2 reading.

Adams' (1990) connectionist model offers further explanation for the word recognition automaticity effect observed by Segalowitz and colleagues. In Adams' model, the importance of word recognition is shown by the strength of the associations among the processors. The speed of phonological activation depends on the strength of the spelling-sound associations. The phonological processor which links to the orthographic processor and the meaning processor serves as a mediating device for lexical access. The phonological code helps readers identify words. The speed and ease of word recognition therefore depends on the spelling-sound associations needed for activation of the phonological code of words which are of limited familiarity. Readers with weak spelling-sound associations will be slow in phonological activation and as a result, will be slow in reading. The connections between the orthographic processor and the meaning processor allow direct mapping of meaning to print for words which are visually familiar and can be recognised immediately. However, to novice readers and especially L2 readers, most words are not frequently encountered and cannot be recognised accurately with the visual input. In other words, for L2 readers, the connections between the orthographic processor and the meaning processor may not be strong because of limited reading experience.

They need to strengthen the spelling-sound associations in order to activate the phonological processor to facilitate word recognition. As reading experience builds up, the connections between the orthographic processor and the meaning processor will be strengthened so that some frequently encountered words can be processed directly from print. Adams' model mainly describes the reading process at word level, her model illustrates the important role of phonological code for word recognition, and the need for direct instruction in phonological decoding especially for L2 readers.

3.2 Phonological coding in word recognition

The role of phonological coding in the word recognition processes can best be explained by the general definition of written language. There are three elements involved in written language, namely script, sound, and meaning. In English, which is an alphabetic language, the written symbols primarily represent sounds, and it is through their representation of sounds that configurations of letters come to refer to meanings (Hoosain 1995). Phonological coding is a natural route for word recognition in the reading process and it can be found in most reading models, whether as an information processing procedure, as a componential unit, or as a processing unit connected to other units. Stanovich (1991) claims that "virtually all theorists agree that phonological codes in working memory play some role in supporting

comprehension processes ... The major dispute has centered around the role of phonological processes in word recognition" (p. 434).

It is generally recognised that there are two routes to access the lexicon. Coltheart (1978) proposes a dual route model of lexical access. He posited two alternative recognition pathways to access the lexicon. There is a direct visual access route that goes straight from the visual input (orthographic code) to meaning and does not involve phonological mediation; and an indirect route through phonology that goes from visual input to sound (phonemic code) to meaning by means of spelling-to-sound correspondences.

According to the dual-route models of word recognition (Coltheart 1978; Coltheart, Curtis, Atkins & Haller 1993), the two routes are parallel options for lexical access. The exercise of the phonological route, although not necessarily under conscious control, depends upon the frequency and the spelling-to-sound regularity of the words. For reading low frequency words, phonological information has to be activated to mediate lexical access, while for high frequency words, as their visual representation has become familiar, meaning can be accessed directly from the orthographic information. Spelling-sound regularity refers to the consistency of the mapping between the letters in the word and the sounds in its pronunciation. Regular words are those whose pronunciations reflect common spelling-sound

correspondences; whereas irregular words are those whose pronunciations reflect atypical correspondences. For irregular words, phonological information cannot be accessible by means of phonological conversion, and lexical access has to rely on the visual information. According to Frost et al. (1987), the relative use of the orthographic and phonemic codes "is determined by factors such as the subject's reading ability, the complexity of the stimuli, and task demands" (p. 104). Obviously, the frequency effect is relative to the reader's reading experience. To novice L1 readers or L2 readers, due to their limited reading experience, most words are new to them or are low frequency words to them. To decode such words, the phonological route will be more useful as phonological information needs to be activated to mediate lexical access and also to aid retention of meaning in working memory for comprehension processes.

Ehri (1994) maintains that phonological cues for reading are more reliable than the visual codes as they make use of a system of rules, i.e. the grapheme-phoneme conversion rules, which can be easily remembered and formed links to the semantic representation of the words in memory. The visual route, on the other hand, can be unreliable as the associations formed between visual cues and words are hard to remember because they are unsystematic and arbitrary. Unless the words are read frequently and become familiar, visually similar words can easily be mistaken for one

another because the visual cues selected are not unique to individual words. Skilled readers may use the visual route and the phonological route for lexical access, depending on word frequency. But if novice L1 readers or L2 readers rely heavily on the visual route for decoding, they may have problems either in word recognition accuracy or speed, which will in turn affect or reduce automaticity of word recognition and cause problems in the comprehension process as well.

Segalowitz (1986) proposes an interactive processing model which captures the two possible levels of phonological recoding. There are three main levels of processing text shown in the model (Fig. 3.1): a visual level which is concerned with the analysis of the printed stimulus, a lexical level which concerns lexical access, and a textual level which is concerned with integrating information across words to facilitate text comprehension. Phonological recoding may occur at two levels, that is, either at pre-lexical level between visual analysis and lexical activation, or at post-lexical level between lexical activation and text level analysis. At pre-lexical level, the phonological representation of the visual input is activated as part of the word recognition process. If words are recognized directly from the visual input, post-lexical phonological recoding is activated to facilitate retention of the word in memory and thereby make them available to higher level processes.

Fig. 3.1 Segalowitz model of reading (1986)

On the other hand, Perfetti, Zhang & Berent (1992) are more definite about the frontline role of phonological recoding in the word recognition processes. They proposed the "Universal Phonological Principle" which is based on the assumption that contact with printed words automatically arouses phonological properties associated with the words. In other words, the phonological activation always occurs in the word recognition process. According to Perfetti et al., "phonological activation always begins 'pre-lexically'. This activation always plays some part in identifying the word, provided the writing system allows it to do so. Alphabetic systems do, logographic systems, generally speaking, do not" (p.228). To them, phonological activation is a necessary step in the reading process. Phonological activation does not

only serve word identification, it also has important function in the comprehension process. The phonological representation of words provides specific discourse reference in the reader's short-term memory to allow retention of exact wording for a sentence or a clause. "The verbatim retention allows a representation over which to parse sentences, repair parsing failures, integrate propositions and make inferences" (ibid: 229). For words that are recognized by the direct visual route, the phonological code still needs to be activated post-lexically as the phonological representation serves as an access code in working memory for text integration. If the phonological representation of the identified word is not sustained in working memory, the comprehension processes will not have the raw materials to operate efficiently and thus understanding of the text will be impaired (Just & Carpenter 1987; Rayner & Pollatsek 1989). Adams and Bruck (1993:130) further illustrate the role of phonological representation in working memory:

> *Without the mnemonic support of the spelling-to-sound connections, the visual system must eventually become overwhelmed: the situation in which [these learners] are left is roughly analogous to learning 50,000 telephone numbers to the point of perfect recall and instant recognition.*

The crucial role of phonological decoding in reading is also discussed in studies of dyslexia. In many studies (Bradley & Bryant 1978; Kamhi & Catts 1986; Snowling 1981), dyslexics who have severe difficulties in learning to read and spell also show impairments in tasks that involve phonological processing, e.g. non-word repetition,

phoneme identification and segmentation. Frith (1997) proposed a "Phonological Deficit Hypothesis" which suggests a phonological deficit as the cognitive basis of dyslexia. In her causal modelling of dyslexia (cited in Fig. 3.2), Frith illustrates the link between a phonological deficit and poor grapheme-phoneme conversion at the cognitive level and the resulting effects on reading at the behavioural level through its interaction with the demands of an alphabetic system. The main task for a child learning to read an alphabetic language is to understand how speech sounds are represented by letters, that is the grapheme-phoneme conversion rules, and how to translate between written and spoken language by meaning of such rules. This alphabetic strategy requires children to segment continuous speech stream into individual phonemes and to map them onto corresponding graphemes which they read. In this process, phonological skills are crucial. A phonological deficit will give rise to poor grapheme-phoneme conversion which will affect reading development.

Fig. 3.2 Causal modelling of dyslexia as a phonological deficit (Frith 1997)

In line with the Phonological Deficit Hypothesis, Snowling and Nation (1997) suggest that differences in phonological skills provide a reasonable account of individual differences both in dyslexia and in normal reading development. They argue from the connectionist view of learning to read which involves the building up of connections between orthography and phonology. Children with well-specified representations of phonological information will have the ability to set up mappings between orthography and phonology and will be able to generalise the rules for reading new words. Dyslexic children, on the other hand, are weak in phonological representations. They have difficulties in phonological reading and spelling. As a result, their acquisition of reading is delayed. Snowling and Nation (1997) reported a two-year longitudinal study on dyslexic children with non-word reading deficit (phonological dyslexics) and dyslexic children with deficit in reading irregular words (surface dyslexics). In their comparison of the phonological and visual abilities of these two types of dyslexics, the researchers found differences only in non-word repetition, phonological awareness and in the phonetic accuracy of spellings, which are tasks considered by the researchers as tapping phonological representations. While both types of children did worse than the controls, the phonological dyslexics had more difficulty in these tasks. Snowling and Nation conclude that there is no support for the classification of the two sub-types of dyslexia. Instead, the severity of a child's

phonological deficit determines the qualitative nature of their reading and spelling performance. Children with more severe phonological deficits are more likely to display a phonological dyslexic pattern, while children with milder phonological deficits may create mappings between orthography and phonology to some extent, and therefore display a surface dyslexic pattern. In this view, the core deficit in dyslexia is in phonology and the reading and spelling difficulties of dyslexics are results of a "core phonological deficit". The different behavioural manifestations in terms of the patterns of reading and spelling difficulties among individuals are considered as a function of the severity of their phonological processing impairments.

In Frith's model (1997), phonological deficit is directly linked to poor phonological awareness and poor word naming, which are behavioural manifestations of problems in word recognition. These problems are not only confined to cases of dyslexia, they are also found among readers with delayed reading development. The notion of a "core phonological deficit" as the cause of reading and spelling difficulties can be generalised to studies of normal and poor readers. According to the "severity hypothesis" proposed by Snowling & Nation (1997), individual differences in reading and spelling are related to the severity of their phonological deficit. On the other hand, in Frith's model, phonological deficit affects reading through its interaction with the demands of the writing system. Alphabetic writing systems, which are based on

grapheme-phoneme conversion rules, make very high demands on phonological ability when learning to read.

To examine the role of phonological ability in relation to the demand of different languages, Frost, Katz & Bentin (1987) extend the scope of study onto languages other than English. They examined the concept of orthographic depth and its influence on word recognition by comparing word naming performance of three groups of native speakers in Hebrew, English and Serbo-Croatian respectively. The three languages are different in the complexity of their letter to sound correspondences, and they represent different points on the continuum of orthographic depth. The Serbo-Croatian writing system with its direct correspondence between grapheme and phoneme, represents a shallow orthography. In the English spelling system, the grapheme-phoneme correspondence is sometimes irregular and inconsistent. Lexical access in English has to be mediated by both orthographic and phonemic codes. Therefore, the English orthography is considered as deeper than the Serbo-Croatian orthography. The Hebrew language is a typical example of a deep orthography, with ambiguity found in the unvoweled print where a consonant structure may be pronounced as several different words. Based on three experiments which tested the effects of word frequency, semantic priming and nonword processing on the word naming speed and accuracy in the three languages, Frost et al. concludes that "word

recognition in a shallow orthography is mediated primarily by phonemic cues generated prelexically by grapheme-phoneme translation. In contrast, lexical access for word recognition in a deep orthography relies strongly on orthographic cues, whereas phonology is derived from the internal lexicon" (p. 113).

The implications of the Orthographic Depth Hypothesis are two-fold. First, the nature of the orthography may influence the processing strategies used for word recognition. In alphabetic languages, where the orthographies are sound-based, phonological recoding plays an important role in word recognition. However, the importance of phonological recoding in word recognition depends on the extent to which the letter-sound correspondence is systematic and consistent. If the orthographic depth continuum is extended beyond sound-based orthographies and includes meaning-based orthographies, such as logographic languages, at one end representing deep orthographies, then the role of phonological recoding is expected to further diminish in word recognition for such orthographies. According to the hypothesis, readers of meaning-based orthographies will not develop phonological processing skills as extensively as readers with sound-based orthographic backgrounds. This first implication leads to the second, if a person's native language is far apart from his or her second language on the orthographic depth continuum, the processing strategies developed in L1 may not be appropriate for L2. When the

orthography is meaning-based, e.g. Chinese, readers are expected to use visual skills for direct lexical access. The phonological code may not be activated by analyzing the components within the word because the minimal representation is a morpheme, which is a character by itself. The phonological code may be activated holistically and often after lexical access. It can be speculated that learners with logographic L1 background learning to read an alphabetic language as a second language will be deficient in the necessary phonological processing skills. Reading an alphabetic language will require readers to analyse the intraword phonological components and assemble the component for a phonological code of the word. The reading difficulties faced by L2 learners with logographic L1 background will be further discussed in Chapter 4.

3.3 Phonological awareness

The significant role of phonological coding in reading English can be attributed to the nature of the orthography. English has a sound-based orthography and the basic unit of representation is the phoneme, which is visually shown by a letter or letter cluster. The individual sounds by themselves carry no meaning. An English word is composed of a string of letters governed by a network of inter-letter associations, and in most cases, can be converted into sound constituents by using grapheme-phoneme

rules. Orthographic knowledge includes knowledge of the grapheme-phoneme conversion rules, patterns of letter sequence and the mapping of writing onto the speech code. The ability to separate, analyze, and synthesize the phonemic components in a word depends on the reader's level of phonemic awareness, which relates to his or her sensitivity to the phonological structure of a word.

The terms "phonological awareness" and "phonemic awareness" are sometimes used interchangeably by researchers. Treiman (1991) defines phonological awareness as "the awareness of any of the phonological units of the spoken language. Languages contain several kinds of phonological units, including syllables, intrasyllabic units, phonemes, and phones. ... a more specific term: phonemic awareness" (159). In this sense, phonological awareness generally includes awareness at all different levels within the phonological structure of a word, whereas phonemic awareness refers specifically to the awareness at phonemic level. The review here includes research both on phonological awareness and phonemic awareness and it will be reported according to the term used by the researchers.

Phonemic awareness (PA) has been a central issue in L1 reading research. Instruction in PA involves teaching children to focus on and manipulate phonemes in spoken syllables and words. Studies on children's reading development show that phonemic awareness is a powerful predictor of reading success among children

learning to read English as their L1 (Bradley & Bryant 1983). Treiman and Baron (1983) cite previous research on L1 reading and argue that lack of phonemic awareness is the reason why children have difficulties learning the grapheme-phoneme rules in L1 reading situation. Firth (1972, cited in Treiman and Baron 1983) shows that the ability to pronounce nonwords accounted for about 75% of the reading ability among a group of young L1 readers. Her results indicate that phonemic awareness, which is demonstrated in the children's ability to analyze the phonological structure of the letter string and apply to grapheme-phoneme rules to pronounce the letter strings, is directly related to reading ability in English as L1.

According to the dual routes models, children who are weak in phonological awareness have to rely on the visual cues for decoding. If they are not aware of the phonological units in a word, they will not be able to analyse and identify the phonological structure and come up with the pronunciation of the word. They have to memorise associations between individual printed words and their pronunciations and / or meanings holistically. Chapman et al. (2001) further explain the importance of phonological decoding in word recognition:

> *Making use of systematic mappings between subcomponents of written and spoken words results in correct word identifications, which in turn leads to the formation of sublexical connections between orthographic and phonological representations in lexical memory. These amalgamated representations provide the basis for rapid and efficient access to the mental lexicon, which*

frees up cognitive resources for allocation to comprehension and text integration processes (p. 144).

Readers who depend on the holistic associations should have difficulty as the size of their written vocabulary increases and as new words must be deciphered (Treiman & Baron, 1983).

The relationship between phonological awareness and reading skill has been the focus of a great deal of research. Bryant (1986) makes a detailed discussion on three major types of research which aim at studying children's reading problems. He first comments on the ambiguity found in the traditional comparison studies between good and poor readers. When children of the same age but different reading abilities are compared for various cognitive and decoding skills, the resulting differences cannot be taken as the causes of the reading difficulties as the comparison studies cannot provide sufficient evidence for a causal link. It is not possible to interpret whether the poor reading is the cause or the effect of poor cognitive and / or decoding skills. Children's poor reading could be caused by their poor decoding skills, but it is also possible that their poor decoding skills are result of their poor reading ability which limits their reading experience. In this sense, it is hard to confirm the cause of poor reading and therefore difficult to identify remedies. Bryant suggests improving the traditional mental age match (MAM) research design with reading age match (RAM) so that children are matched on their reading ability. Good and poor readers will differ

in age but not reading ability. If poor (older) readers are found worse in decoding skill, then the differences can be interpreted as plausible reasons for the reading difficulty. This is because the poor (older) readers read as well as the good (young) readers, and the poor readers' delayed reading development could be caused by their poor decoding skill. On the other hand, since the two groups are matched on reading ability, reading ability cannot be the cause of the poor decoding skill.

Results gathered from comparison studies can only suggest a plausible causal hypothesis about the influences of certain skills on children when they are learning to read and to write. But to test such a causal hypothesis, Bryant suggests two methods used by developmental psychologists. The first type is longitudinal and correlational studies, and the other is training experiments. The advantage of correlational studies is that they can establish that a relationship exists between a skill that children master and their reading success. But the disadvantage is that there is no guarantee that the relationship is a causal one. The example used by Bryant is that "if A predicts B, you cannot be sure that it causes B because both A and B might be influenced by a third factor, X "(p.59).

According to Ehri (1979), there are many ways to interpret the correlation between phonemic awareness and reading acquisition. Reading experience may be a prerequisite for becoming aware of phonological structures. Or alternatively,

phonemic awareness may be a prerequisite for reading acquisition. In other words, phonemic awareness can be regarded as a possible consequence of becoming literate, or literacy may be a consequence of phonemic awareness. Longitudinal studies (e.g. Lundberg, Olofsson, & Wall 1980), which measured pre-school children's phonological awareness and then monitored the progress in their reading acquisition in later years in school, have helped to clarify the predictive validity of phonemic awareness on reading acquisition, but longitudinal studies alone cannot single out the causal effect between the two variables as there can be unknown factors which influenced the development of reading acquisition. As Lundberg et al. conclude, phonological awareness may be necessary but not sufficient for the acquisition of reading.

To test a causal hypothesis, training experiments should be used. Bryant (1986) explained that if you think A affects reading, "you give an experimental group judicious amounts of A and at the same time make sure that the control group has all the same experiences except for A itself. Then you see whether the first group learns to read more rapidly than the second. If you do find this difference, you can be sure of having established a cause. That is the great advantage of these experiments" (p.60). The major uncertainty about training experiments, as in all experiments, is their generalisability of results outside the laboratory. Bryant also comments that "their

great disadvantage is the risk of being artificial. What prompts a developmental change in a laboratory may have nothing at all to do with the things that really make this development happen outside" (ibid).

To summarise, the three types of research methods discussed by Bryant are not mutually exclusive. The strength and weaknesses of each method are discussed above. As different methods serve different purposes, the choice should depend on the research questions to be answered. For example, the methods can be combined and employed in sequence to pursue the study of reading difficulties. The comparison studies and the correlational studies can be used to identify the specific skills or factors that are related to and predictive of achievements in reading. These predictors may as well be causes of their reading problems, but the causal hypotheses have to be further tested. To test the causal hypotheses, training experiments can be used.

Vellutino and Scanlon (1987) neatly summarised the need for combined evidence gathered by different methods to support a causal relationship between phonological coding deficits and reading disorder. To them, "several types of evidence must be obtained in order to document a causal relationship between deficiencies in reading and deficiencies in a skill hypothesised to be causally related to success in reading: (a) longitudinal data demonstrating the predictive validity of the hypothesised skill; (b) data from contrasts of normal readers and older poor readers,

who are matched for reading achievement, demonstrating that the normal readers perform as well as or better than the older poor readers on measures of this skill; and (c) data from studies demonstrating that training in the critical skill improves performance in reading" (p. 323).

The training study conducted by Bradley and Bryant (1983) provides the first adequate empirical evidence for the causal link between phonological awareness and reading. In their study, 65 children were divided into four groups. One group was trained to categorise words with common sounds in different positions. For this group, only pictures were used in the training. The second group was trained in the same way, but instead of using pictures, letters were used. The third group was the control group with training not in sound categorization but in conceptual classification with pictures, categories of animals or plants. The fourth group received no training at all. Their results show that children trained with sound categorization performed in reading better than the control groups at the end of the 2 years' training period. Interestingly, the gains were largest in the second group who received training in letter-sound correspondence in addition to sound categorization.

Based on the research principles outlined by Stanovich (1986a, cited in Vellutino & Scanlon 1987), Vellutino & Scanlon (1987) reported a longitudinal and correlational study and a training experiment to provide evidence for the causal

relationship between phonological coding deficits and reading disability. In the first study, the researchers conducted an oral reading test and 7 phonological measures on reading readiness on 3 cohorts of 295 kindergartners in three grades. Their results show that the tests which are most highly and most reliably correlated with oral reading ability are those which depend heavily on phonemic segmentation ability. Their data therefore support the proposition that "facility in phonemic segmentation is a powerful predictor of success in beginning reading" (p.328). To confirm the causal relationship between phonological segmentation skill and reading success, Vellutino & Scanlon used a training experiment to find out whether training in phonemic segmentation would cause improvement in reading. Their training study involved both age-matched poor and normal reader groups as well as reading ability-matched groups. Their results indicate that training in phonemic segmentation and alphabetic mapping had a positive effect on word identification and code acquisition, regardless of the readers' age and reading ability. Moreover, the pattern of results on phonemic segmentation measures was closely parallel to the pattern of results on the word identification and code acquisition measures. The findings of the training study thus reinforce the findings of the correlational study and confirm the existence of a causal relationship between deficiencies in phonemic segmentation and difficulties in learning to read.

With reference to the three types of evidence Stanovich (1986a) listed for documenting a causal relationship between phonological skills and reading ability, Wagner & Torgesen (1987) conducted a comprehensive review on research centered on the issue of phonological abilities and their causal roles in the acquisition of reading skills. They first identified three kinds of phonological processing: (1) phonological awareness which refers to awareness of the sound structure of language; (2) phonological recoding in lexical access, that is recoding written symbols into a sound-based representational system to get from the written word to its lexical referent; and (3) phonetic recoding in working memory, that is recoding written symbols into a sound-based representational system to maintain them efficiently in working memory. They include both longitudinal and correlational studies and experimental studies which are mainly in the form of training experiments. Their review supports a causal role for phonological awareness in learning to read, and suggests the possibility of similar causal roles for phonological recoding in lexical access and phonetic recoding in working memory.

Another longitudinal study was reported by Juel (1988) on the literacy development of a group of L1 children in U.S.A. The children were tested on phonemic awareness, decoding, word recognition, listening comprehension, reading, spelling and writing at the end of each school year, starting from first grade up to the

end of fourth grade. The test results show that children who became poor readers entered first grade with little phonemic awareness. According to Juel, the poor entering phonemic awareness appeared to contribute to a very slow start in learning spelling-sound correspondences. As a result, the poor decoders showed very slow development in their decoding skill. By the end of fourth grade, the poor decoders had still not achieved the level of the average to good readers in the beginning of second grade. Most poor readers in first grade remained poor readers at the end of fourth grade. Results in this study indicate that phonemic awareness plays an important role in early literacy development such that deficiencies in phonemic awareness in early stage will limit the development of reading ability and the effect appears to be long-lasting.

On the other hand, Juel (1988) suggests that exposure to print is a contributing factor to reading development. If children did not develop good word recognition skill in first grade, they began to dislike reading and read considerably less than good readers, both in and out of school. Their reduced exposure thus limited their reading development. The findings indicated that decoding skills and reading development are reciprocal, and there seemed to be a vicious circle between poor word recognition skill and poor reading development. This "Matthew effect" in reading (Stanovich 1986b) where good readers, with good decoding skill will read more and become

better readers, while poor readers tend to read less because of their decoding difficulties and thus remain poor in reading, highlights the crucial role of decoding skill in reading development. Therefore, Juel calls for early instruction on decoding skill. She maintains that "if decoding skill arrives much later, it may be very hard to change the direction that reading achievement will take: Poor decoding skill leads to little reading and little opportunity to increase one's basic vocabulary and knowledge through reading, leaving a shaky foundation for later reading comprehension" (p.446). This is not only true for L1 reading development, but also L2 reading because these readers have even less reading experience in the target language.

Similar results were also found in another longitudinal study in New Zealand. Chapman, Tunmer & Prochnow (2001) examine the relation between the development of phonological processing skills and the effectiveness of a Reading Recovery programme (RR) using whole language instructional approach. They tested 152 children on seven occasions starting from their first year in school up to the end of Year 3. Children who were selected to join the RR programme at the beginning of Year 2 based on their reading achievement in Year 1 were compared to normally achieving readers. Findings in Year 1 indicate that the poor readers had deficiencies in phonological processing skills during the year preceding their participation in the RR programme. The results suggest that phonological processing skills are strongly

related to reading achievement. Findings in Year 2 and Year 3 show that participation in the RR programme did not eliminate or reduce these poor readers' phonological-processing deficiencies. Moreover, the RR children showed no sign of accelerated reading performance. The results indicate that the RR programme failed to significantly improve the literacy development of children considered to have completed the programme. The researchers attributed the failure of the RR programme to its whole language instructional approach where there is a lack of emphasis on the development of phonological processing skills. Chapman et al. thus suggest the inclusion of more intensive and explicit training in phonological processing skills in RR programmes.

In line with Juel's findings (1988), results of Chapman et al. (2001) also reveal that RR children showed declines in reading self-concept, in perceptions of ability in reading and spelling, and in general academic self-concept following RR. This again illustrates the "Matthew effect" of reading. This effect is an important, but often ignored aspect of the consequences related to delayed or ineffective intervention for poor readers. The results echo Juel's call for early intervention programmes with emphasis on the development of phonological skills, especially necessary for children with slow literacy development, as well as for L2 readers with little experience in decoding an alphabet language.

While most of the research has been conducted with young readers, Shankweiler, Lundquist, Dreyer & Dickinson (1996) conducted their experiments on older children. They conducted two experiments to assess the basic skills in reading and spelling and supporting metalinguistic abilities of high school students in U.S.A.. In the first experiment, the students were tested on spelling, phonological and morphological awareness and decoding. The students displayed deficiencies in spelling and in decoding. Phonological awareness, which was measured by a phoneme deletion task, was highly correlated to decoding. And both phonological awareness and decoding were found to contribute similarly to reading and spelling. The correlations between morphological awareness and spelling were much smaller than those involving phoneme awareness. The results suggest that both reading and spelling are based on a similar set of skills, that is, phonological awareness. The second study further examined the impact of spelling ability and decoding skill on text comprehension. Students of the same level were tested on comprehension, decoding, spelling, vocabulary and they were also asked to check off the magazine titles they were able to recognise on a list. The last measure was used to gain an estimate of students' reading behaviour outside of school. Results show that differences in decoding and spelling ability are associated with differences in comprehension. Even among experienced

readers, individual differences in comprehension of text reflect efficiency of phonological processing at the word level.

In terms of the direction of the causal relationship, research reported above suggest that improvement in phonological skills would lead to improvement in reading ability, but Perfetti, Beck, Bell & Hughes (1987) claim that the relationship should be reciprocal. The group carried out a longitudinal study on 82 first grade children over one year to test the reciprocal relationship between phonemic knowledge and learning to read. Children were tested at four points throughout the year on tasks of synthesis (phoneme blending) and analysis (deletion and tapping). The two types of phonemic knowledge pose different cognitive demands and were found to bear different relations to reading progress. Synthesis skill taps on essential but primitive knowledge of segmentation. Success at reading depends on it. It has simple (non-reciprocal) enabling relationship to reading gains. Deletion taps on a non-essential but sophisticated segment analysis ability which is truly reciprocal in its relation to reading. Gains in reading enable gains in segment analysis ability which enables further gains in reading. Results of their study show that "learning to read ... may require only minimal explicit knowledge of speech segments. Thus, the rudimentary ability to manipulate isolated segments may be necessary for significant

progress in reading. However, it is reading itself, ... that enables the child to be able to analyse words and to manipulate their speech segments" (p. 317).

Another important research aspect on the relationship between phonological awareness and literacy development is to examine the lasting effects beyond the initial training period. Stuart (1999) first reported a 12-week training study on phonemic awareness and phonics teaching on a group of 5 year-old children. A delayed post-test was administered 18 months after the intervention. Results were compared with a control group who received teaching for the same amount of time, but with a more holistic reading experience by using Big Books. The phonics group had significantly higher reading accuracy scores in terms of reading aloud continuous text. They were also more advanced in word reading and spelling, although the mean difference in reading comprehension scores did not reach statistical significance.

To trace the long lasting effects of the training, a follow-up study was conducted 30 months after the training. The post-test was administered again to the same students. Stuart (2004) reported that lasting influences of early phonological training in phoneme awareness, grapheme-phoneme correspondence knowledge, word reading and spelling were found. By the time of this follow-up study, some children in the original control group had received one year's phonemic awareness and phonics teaching. This group was then treated as a "late trained" group and was compared to

the early trained and the untrained groups. Results of the early and late trained groups were similar, showing that intervention at a later stage can still be a successful catch-up strategy. However, results on the post-tests at both stages (18 months and 30 months) show no influences of training on reading comprehension. The researcher suggests that this might be due to the large majority of ESL children (86%) among the participants in this study. Stuart (2004) explains that "oral language skills, particularly receptive vocabulary, were associated with text reading accuracy and skills in the ESL but not the English L1 children. Possibly the underdeveloped oral language abilities of the ESL children were delaying development of their ability to read and understand continuous text, and/or to respond to open-ended questions" (p.32). Stuart thus calls for caution when teaching ESL children: "that is, devise ways of fostering their L2 oral language comprehension and explicitly focus on reading comprehension as well as phonics" (p. 33). Unfortunately, perhaps the number of L1 children in this study was not big enough to warrant a comparison so as to verify the speculations made between L1 and ESL children's development on text reading. Moreover, the background of the ESL children in this study was not clear and therefore it is difficult to tell whether there is any influence or interference from their L1 background. Nevertheless, the longitudinal studies reported by Stuart (1999 and 2004) show long-lasted benefits of phonemic awareness and phonics teaching on both L1 and ESL

children's decoding and encoding skills. Both the early and late trained groups performed better than the untrained group at all stages. However, the effects of the training are limited to word level. The results are similar to research which focused on word reading (Bradley & Bryant 1983; Vellutino & Scanlon 1987) but the expected effect on text comprehension, which was found in other studies (Juel 1988; Shankweiler et al. 1996; Chapman et al. 2001), was not found. Stuart suggests that the ESL children's lack of receptive vocabulary might have hindered the development of their reading comprehension. On the other hand, the language environment and the readers' motivation in reading are also crucial factors related to the "Matthew effect" in reading (Stanovich 1986b) discussed above which could be another possible reason for the L2 children's delayed reading development.

Results of the longitudinal intervention study conducted by Hatcher, Hulme and Ellis (1994) may help to explain why some phonological training experiments, like Stuart (1999), could not bring about improvement in reading comprehension. Hatcher et al. suggest that "an effective way of improving reading skills involves a joint approach that integrates the training of phonological skills and the teaching of reading" (p.52). Their study involved 4 matched groups of 7-year-old poor readers and they were assigned to 3 experimental teaching conditions: Reading with Phonology (R+P), Reading Alone (R), Phonology alone (P) and a Control. The groups

were given extra teaching in three different conditions on individual basis in 40 30-min sessions over 20 weeks. All the groups were tested before and after the training, and also 9 months later. Their results show an interesting pattern and support the Phonological Linkage Hypothesis suggested by the research team. Group P has made significantly more progress in phonological skills than the Control group while neither of the other two treated groups has. However, Group P has failed to make significantly more improvements in all the five reading measures than the Control group. On the other hand, Group R+P made most progress in reading. The researchers conclude that training on either reading or phonology alone is less effective than integrating both in the training to improve literacy skills. It is important that explicit links are formed between reading activities and phonological knowledge so that children can relate their awareness of phonemes to the process of reading.

Based on the Phonological Linkage Hypothesis, Hatcher, Hulme and Snowling (2004) conducted another training study aiming at identifying the effect of the size of phonological unit (rhyme vs. phoneme) and the effect of such training on a younger age group (kindergarten age : around 4.5 years old). The 410 children were assigned to three experimental teaching conditions, Reading with Rhyme, Reading with Phoneme, Reading with Rhyme and Phoneme and a control condition. Their results indicate that there was no significant improvement in normally developing children in

reading scores. Although the normally developing children have made improvements in phonological skills, these improvements did not translate into improvements in literacy skill. On the other hand, children at risk of reading failure had made more progress in learning to read after receiving the training. It was also found that training with phonemes was more effective than with rhymes. The researchers conclude that the existing reading programme with a highly structured phonic component used in schools is sufficient for normally developing children. The additional phonological training may be redundant to them. But for young children at risk of reading delay, structured training in phoneme awareness and linking phonemes with letters is beneficial. This training study was conducted in the context of teachers working with whole class. The results thus suggest that it is possible to incorporate phonological training in classroom teaching, although some children with severe difficulties may still need individual training.

On the question of the length of training, Hatcher et al. (2006) reported an intervention study comparing a 20-week intervention group with a 10-week group. Instead of using the whole-class approach, the programme was delivered in daily 20-minute sessions that alternated between small group (N=3) and individual teaching. The programme started with the 20-week group, and after 10 weeks, the other group then started. Both groups were tested before, at 10 weeks, and at the end of the

programme. During the first 10 weeks, the 20-week group which started the programme first, showed significant improvements in all measures including phoneme awareness, phoneme manipulation, letter identification and word reading. However, the second group who only received the intervention during the second 10-week period managed to catch up with the first group at the end of the programme. It appeared that the progress of the first group had slowed down in the second half of the programme. The reason for the slow down was not clear. Although the intervention was found to be effective, there was no conclusion about the preferred length of intervention period. On the other hand, there were around 20% of children in both group failed to respond to the intervention. The regression analyses showed that the severity of the initial reading problem and a measure of social deprivation (being in receipt of free school meals) are independent predictors of children' responsiveness to the reading intervention provided. The researchers suggest that these children may need more intensive or more prolonged helped to improve their reading skills.

The above studies conducted by Hatcher and colleagues explored the various factors affecting the effect of the intervention. Their results seemed to suggest that there is an optimal level / age as well as length for phonological intervention. Phonological training may be more effective when combined with reading practice and when given to poor readers. It also appeared that training is most effective in the

initial period and teachers need to be aware of the slowing down of the effects and find ways to maintain the learners' interests in the training.

English is an alphabetic language and according to the Orthographic Depth Hypothesis, the relationship between phonological awareness and literacy development in English is rooted in the nature of the orthography. To further test this hypothesis, studies are extended from English L1 context to the context of other alphabetic languages. Durgunoglu and Oney (1999) compared two groups of monolingual children: Turkish and English, and at two levels: kindergarten and first grade. Both languages have an alphabetic orthography, but they differ in orthographic depth and syllable structure. The Turkish orthography, with a regular syllable structure, is shallower than the English. The comparison between the two levels indicates that children in first grade have better phonological awareness than the younger ones in kindergarten. The result implies that as children become literate, their phonological awareness levels increase as well. The same developmental pattern was found in both language groups. Durgunoglu and Oney suggest that such a developmental pattern indicates a bi-directional link between phonological awareness and literacy development. In other words, phonological awareness facilitates literacy development, and as children's reading experience grows, their phonological awareness also increases. As Turkish has a more regular syllable structure, the

Turkish children were found to be more proficient in handling syllables at an earlier age. Moreover, the Turkish group also performed more accurately at phoneme tapping and phoneme deletion tasks. According to Durgunoglu and Oney, this can be attributed to the very strong vowel harmony in Turkish which requires speakers to be sensitive to hear the individual phonemes in words. Results of this research contribute to the question of the role of phonological awareness in the acquisition of reading in an alphabetic orthography and in this case, both Turkish and English.

De Jong and van der Leij reported 2 consecutive longitudinal studies (1999 & 2002) on Dutch children's development in word decoding and reading comprehension. De Jong and van der Leij (1999) examined the relations between the development of various phonological abilities (phonological awareness, verbal working memory, and serial rapid naming) and the development of word decoding, in terms of decoding speed, in a group of Dutch children from kindergarten through second grade. Phonological awareness at the beginning of first grade appeared to exert an additional effect on word decoding speed at the end of first grade. But the additional effect of phonological awareness on word decoding speed disappeared after first grade. The researchers conclude that for Dutch children the importance of phonological awareness seemed to be limited to the first year of reading instruction. However, they also noted that the additional effect in the second grade could have been too small to

be detected but such effect might be revealed over a longer period of time. Their longitudinal study was therefore extended to the third grade.

In the extension of their study (de Jong and van der Leij 2002), they examined the same sample from first grade to the end of third grade with the aim to detect additional effects of individual differences in phonological awareness and serial rapid naming on word recognition speed in a period of two years. Their results are similar to the first study. They conclude that "taking a longer period of reading development, neither phonological awareness nor rapid-naming speed had an extra impetus on the development of word-decoding speed after the end of first grade. The result provides further evidence for the time-limited effects of phonological abilities on word-decoding speed in children learning to read in Dutch" (p.70). However, it has to be noted that the researchers interpret the time-limited effects found among Dutch children as specific to a language with shallow orthography, or with consistent grapheme-phoneme relations such as Dutch. For children learning to read in a relative inconsistent orthography, such as English, they expect individual differences in phonological awareness remain to have an additional influence on subsequent word decoding speed.

3.4 Summary

The literature reviewed in this chapter documented the role of word recognition in the processes of reading comprehension. Being a fundamental stage in the reading process, efficiency of word recognition is a necessary, though not sufficient, condition for good comprehension. The automaticity theory (LaBerge & Samuels 1974; Samuels 1994) highlights the importance of efficient and effective decoding in order to increase reading fluency and comprehension. The dual-route models of the word recognition sub-process (Coltheart 1978; Coltheart et al. 1993) suggest that meaning can be accessed either straight from the visual input or via the phonological code. Although the two routes are interactive and compensatory, it is found that the phonological route is more reliable than the visual route for decoding an alphabetic language, especially when decoding unfamiliar words. It is also more useful for decoding low frequency words. According to the Orthographic Depth Hypothesis, word recognition in a shallow orthography is mediated by phonological cues generated by grapheme-phoneme conversion. As English is alphabetic and its orthography is sound-based, phonological coding represent a preferable route, though not the only route for the word recognition process.

Studies on the learning L1 reading of alphabetic languages found that phonological awareness is a powerful predictor of reading success. Longitudinal and

training research provides supporting evidence for a causal relationship between phonological awareness and reading development. This relationship is also reciprocal such that poor phonological awareness will limit the reader's reading development, and thus lead to little reading and little exposure to print, which in turn, constrain the development of phonological skills.

While deficit in phonological skills is found to be a cause of reading difficulties in the L1 context, the same causal relationship may also be found among L2 readers. Despite the importance of phonological skills in learning to read English, the Orthographic Depth Hypothesis predicts that L2 readers coming from a meaning-based orthographic background will be deficient in phonological skills in terms of identifying and analyzing the phonological components within a word for accessing the phonological code of such word. The nature of their logographic L1 limits their opportunities to develop the necessary phonological skills for decoding an alphabetic L2 and at the same time develops their habits of using the visual strategy for decoding. It is predicted that such readers will have difficulties in their L2 reading development. The following chapters will review literature related to L2 reading and focus on the reading difficulties faced by Chinese readers learning to read English as a second language.

4. Reading in a second language

4.1 L2 readers from different language backgrounds

Reading in L2 is different from reading in L1. Koda (1994) highlighted three fundamental differences between the two. First, the L2 reader may have prior reading experience. The L2 reader's prior experience may facilitate or hinder development in L2 reading. Second, L2 reading is cross-linguistic, implying that the similarities or differences between the two languages need to be taken into account. Third, reading ability develops before adequate oral fluency is achieved. There is also the question of language environment which determines the amount of exposure to the target language.

One of the problems of L2 reading lies with the influence of the readers'L1 background. Readers from different L1 writing backgrounds may have developed different word recognition skills and strategies. These skills and strategies are shaped by their L1orthography to cope with its specific orthographic structure, but readers tend to continue using the same recognition skills in L2 reading. The transfer of cognitive processing mode for word recognition from L1 to L2 may interfere with the acquisition or operation of the recognition skills necessary for L2 , especially when the L1 and L2 writing systems share little or no similarity. In the case when the L1

and L2 writing systems belong to different orthographic types, the processing skills required by the two orthographies will be different from one language to another, so that a new set of skills for processing L2 at word level "must be learned from scratch" (Brown & Haynes 1985:23). Their study tested the phonological skills, visual skills, listening proficiency, reading speed and read comprehension of Japan learners of English. As both the orthography of Japanese Kanji and Chinese are logographic, results found among Japanese L2 readers can be generalised to Chinese L2 readers. Brown and Haynes found strong L1 influence from among the Japanese L2 readers as their phonological skill in terms of relating sequence of letters to phonemes in spoken English is weak and they rely heavily on visual decoding. The researchers maintain that the learning of the new skills can be problematic as interference will come from the L1 basic skills which are deep-rooted and resistant to modification and suppression, resulting in slower development of L2 reading competence (ibid).

Research on the interference of L1 writing system has found effects on visual skills and decoding strategies. Green & Meara (1987) compared the script processing skills of different language groups, namely Spanish, Arabic and Chinese. In their experiments, a target symbol was presented on a screen for one second, and then reappeared after a one-second pause in a string of five symbols. The position of the target symbol varied among the five symbols. The subjects had to determine whether

the target symbol was present in the string. Reaction time was measured. Each language group was presented with a set of strings in their native writing system together with another set of Roman letters. Green and Meara argue that if visual search patterns reflect the cognitive processes and procedures involved in word recognition, then different writing systems with different word structure should give rise to distinct search patterns. They found that learners from different orthographic background show different search patterns for visual features, e.g. native English speakers and Spanish speakers have an M-shape search pattern for letters and a U-shape pattern for shapes, whereas both the Arabic and Chinese L1 speakers have a only U-shape pattern for searching both scripts in their native language as well as Roman letters. The M-shaped search pattern represents analysis of intraword components whereas the U-shaped pattern indicates attention only given to the beginning and the ending of a word, suggesting a holistic approach in handling words. These findings not only confirm the distinct search patterns shaped by different languages, but also indicate transfer of L1 visual skills to L2 word recognition. The researchers conclude that these word-handling procedures which are established for L1 materials continue to be used when L2 learners are processing different orthographies. They suggest that L2 learners need to adapt their visual procedures to handle written materials in the way as native speakers of the L2. They also warn that

"if adaptation does not occur, some non-native speakers of English should experience severe difficulties in reading certain types of words, for example, they may be unable to read aloud regular words whose meanings they do not know" (p.112). The implication of their findings, however, seems not just to be restricted to the learners' ability of oral reading, but also their reading accuracy. The U-shaped search pattern indicates that there is less attention given to the centre of a word, and as a result, the learners will easily be confused by visually similar words.

The difficulties suggested by Green and Meara (1987) can also be identified in Ryan & Meara (1991) where the researchers found that Arabic speaking learners of English tend to confuse words with similar consonantal structures. Moreover, these L2 learners are slower and less accurate in spotting missing vowels in word matching tests. Ryan and Meara attributed the cause of the errors to the specific lexical process related to the learners' L1 orthography. As modern Arabic writing does not normally represent vowels, readers of Arabic are accustomed to a script which plays down the importance of vowels. The research findings indicate that the Arabic speakers transfer their L1 skills to read English words and this gives rise to their word recognition problems.

Randall (1991) found a flat curve in the search pattern of his Malaysian subjects. This is a unique search pattern as compared to the patterns identified among English

speakers and Arabic speakers. He also found that the Malaysian subjects used the same pattern for reading Roman alphabets as well as Arabic letters. As Bahasa Malaysia can be written in either Roman alphabet or Arabic letters, Malaysian speakers are expected to read the two scripts in the way as English speakers and Arabic speakers. But instead, they did not produce search patterns which resemble those found with native speakers of either English or Arabic, i.e. either an M-shaped or a U-shaped curve. His explanation of the flat curve, which indicates a lack of attention to the centre of the array, relates to the regular syllabic structure of Bahasa Malaysia. It is not necessary for Malaysian readers to scan through a word on a letter-by-letter basis but to read syllables as units in a word. There was no special attention given to the beginning and end, nor individual letters in a word. The absence of an end-effect as found in the search patterns of English speakers and Arabic speakers is due to the highly regular letter to sound correspondence in the language. The Malaysians used syllables as units for word recognition. Randall's findings show that word recognition process is not so much influenced by the script, because Bahasa Malaysia can be written in Roman alphabet, but the Malaysian subjects in this study did not read Bahasa Malaysia written in Roman alphabet in the same way as native speakers reading English. Neither did the Malaysian read their native language written in Arabic in the same way as native Arabian reading Arabic. Randall suggests that

their word recognition strategy may not only be influenced by the script, but also the phonological structure of the language itself. Randall also suggests that word recognition process in Bahasa Malaysia may interfere with word recognition in English. Such effect, however, was not explored in his discussions.

Apart from the different visual search patterns which are found to be shaped by the corresponding orthographic structures of different languages, researchers also found that the phonological representation of the different orthographies has strong influence on the readers' development of phonological skills. The "Orthographic Depth Hypothesis" proposed by Frost, Katz and Bentin (1987) provides a useful conceptual framework for research in this direction. Frost et al. classified orthographies as shallow and deep along a continuum according to the regularity of their letter to sound correspondences, and predicted that the shallower the orthographies are, the more phonological coding is involved in word recognition.

Geva & Siegel's comparison study (2000) is an example of research on the effect of orthographies with different orthographic depth on the readers' cognitive processing skills. They compared the L1 (English) and L2 (voweled Hebrew) reading skills of 245 Grade 1 to Grade 5 children in Canada. Apart from their reading skills in different orthographies, their cognitive skills such as L1 and L2 short-term memory and working memory were also compared. In their research, voweled Hebrew was

used and it was considered as a shallow orthography as "there is direct and almost universal correspondence between graphemes and phonemes" (p.4). English is taken as a deeper orthography as the grapheme-phoneme correspondence is not one-to-one and in many cases, the value of a phoneme is determined by its position in a word and also by the neighbouring letters. Geva & Siegel's results indicate that 'the script dependent hypothesis' which posits that L1 and L2 reading performance varies as a function of the differences in orthography transparency between the two languages. The researchers found that children could read more accurately voweled Hebrew than English; and the decoding error categories were orthography-specific. They conclude that both orthographic and cognitive factors are complementary in explaining the differences in L1 and L2 development. When the orthography is more transparent, young children appear to develop their word recognition skills with relative ease, even in the absence of sufficient linguistic proficiency. When the orthography is deeper, children take long to develop command over the full set of rules and rule exceptions. Results in this research (Geva & Seigel 2000) provide support for the orthographic depth hypothesis and at the same time highlight the effect of orthographic differences on reading development.

The Orthographic Depth Hypothesis proposed by Frost et al. (1987) was primarily focused on comparisons of different alphabetic languages. But based on the

theory of orthographic depth, the hypothesis can be generalised to comparisons of different language groups. Different languages can be grouped according to the nature of their orthographies. Orthographies can generally be categorized into three types: alphabetic, syllabic, and logographic, based on their basic unit of orthographic representation. The basic units in the three types of orthographies are alphabet, syllable and logograph respectively. According to the nature of these basic units, Koda (1997) suggests a further grouping into two types: phonography and logography, i.e. sound-based and meaning-based orthographies, depending on whether the written script represents sound or meaning.

Both alphabetic and syllabic orthographies belong to the phonography type, as their basic graphemic units are representations of segmented phonological information. For sound-based orthographies, the phonological code of a word can be obtained by a process of analyzing the phonemic representations within the word. English, as an alphabetic language, is an example of sound-based orthography, but with its spelling system simultaneously represents both the phonology and morphology and these representations are mixed inconsistently from word to word with irregularities in grapheme-phoneme conversions, it lies somewhere along the continuum between the shallow and deep extremes. Word recognition in English relies on both phonological and visual coding, depending on the spelling regularity as well as word frequency.

On the other hand, logographic orthographies are morpheme-based, as their basic graphemic units are direct representations of meaning and the phonological code of a word is mapped onto the graphemic unit on a one-to-one basis. Contrasting to alphabetic languages, logographic languages lie at the deep end of the orthographic depth continuum. Chinese and Japanese Kanji are examples of logographic orthographies. The Chinese system is described as morpho-syllabic (de Francis 1984, cited in Haynes 1990) with separate characters as basic and stand-alone writing units, and each character maps onto a morpheme. The mapping is holistic. Chinese characters are not compositional in the sense that they are not made up of alphabets or symbols which can be segmented and analyzed. Word recognition is expected to be holistic rather than analytic. As meaning is directly mapped onto writing, visual decoding is more efficient than phonological decoding. If the processing skills and strategies are shaped by the orthographic nature in the process of literacy development, then readers of logographic languages are predicted to have weaker phonological skills as their L1 does not provide much opportunities for them to develop the skills. Such skill deficiency in analysing and assembling the phonological components at intra-word level will affect their development of reading English as a second language.

4.2 ESL learners with logographic L1 background

Chinese and Japanese Kanji are the two typical examples of logographic writing system. As predicted by the Orthographic Depth Hypothesis and the research discussed above (Green & Meara 1987; Ryan & Meara 1991; Randall 1991; Geva & Siegel 2000), L2 readers coming from these deep orthographies may have difficulties processing the phonological structure of the English language. Most of the research in this area are cross-lingual comparisons focusing on identifying the difficulties faced by Chinese or Japanese when learning to read English as a second language. There are different focuses and each identified a different aspect of the reading difficulties faced by L2 readers coming from logographic language background.

Among the early comparison studies is Brown and Haynes' comparison (1985) of L2 learners from Japanese, Arabic and Spanish language backgrounds. They tested the three groups on six component skills in reading, including visual discrimination of Roman alphabetic letter pattern, visual discrimination of non-alphabetic shapes, oral reading, vocabulary knowledge, grammar knowledge, and listening comprehension. The researchers reported that the Japanese group outperformed the other two groups on visual discrimination tasks, but their performance on oral reading tasks was worse than the other two groups'. The Japanese group showed difficulties in translating visual symbols to spoken units. In other words, the group has difficulties in

phonological recoding which may have led to their poor performance in oral reading. The researchers attributed the difficulties to the group's lack of experience in segmenting and analyzing the phonological structure of a word and their insufficient knowledge of the grapheme-phoneme rules for translating sequences of letters into spoken words. The researchers explain that the group's lack of alphabetic processing experience and limited skills in phonemic analysis are related to the different orthographic nature between their L1 and L2. The non-alphabetic nature of their L1 orthography limits their experience in developing the necessary phonological skills for alphabetic literacy. On the other hand, the Japanese group's superior performance in the visual discrimination tasks suggests transfer of L1 processing skills to L2 reading. But the transfer of inappropriate processing skills may interfere with L2 processes and thus further delaying the development of appropriate L2 processing skills.

Apart from comparison among L2 readers from different orthographic backgrounds, there are also comparisons between L2 readers from logographic background with English native speakers. Koda (1987) compared the word recognition strategies between L2 readers from Japan and L1 readers of English. With a replicate of the Cunningham and Cunningham (1978) research design, Koda compared the two groups on their ability and speed in recognising pronounceable and

unpronounceable letter strings representing names of fish types. The groups were asked to learn the names (pronounceable and unpronounceable versions) alongside with the pictures of the fish. They were then tested on comprehension by matching descriptive passages with pictures, and reading speed by reading a passage with fish names in it (pronounceable and unpronounceable versions of fish names). It is hypothesised that strategies developed in L1 reading are transferred to L2 reading and that readers of meaning-based orthographies reading sound-based scripts in a second language will not obtain lexical sounds through phonetic analysis as extensively as readers with sound-based orthographic background. Although there was no difference found in comprehension, the reading speed was contrasting between the two groups. The native speakers were faster in recognising the pronounceable letter strings but the Japanese were faster in recognising the unpronounceable letter strings. The Japanese group expressed in their reflective report that they seldom consciously used phonological recoding in reading. Instead, they relied on the visual code, and used other strategies, like association, to help them remember the words. Koda's research finds different use of processing strategies between different language groups and the Japanese group's performance indicates strategies transfer from L1 to L2 reading.

A consistent pattern was found in the comparison study of Haynes and Carr (1990). They compared the performance of 60 Chinese college students in Taiwan to

a group of English L1 college students in U.S.A. on a visual same-different matching task with four sets of stimuli (number pairs, word pairs, pseudoword pairs and letter string pairs) to measure the readers' handling of the orthographic structure of the English language. They computed score differences between word and pseudoword efficiency which they called lexicality effect and pseudoword and letter string efficiency which they labelled as orthography effect. The groups performed similarly in word pair matching efficiency, and while the American students maintained almost the same efficiency in word and pseudoword matching, the Taiwanese group scored lower in pseudoword pairs. Although both groups scored the lowest in letter strings, the score difference of the American group between pseudoword and letter string was about one third higher than the Chinese group. The results thus indicate that the Chinese college students gained less advantage from orthography effect than the American group. The researchers reckon that "since the Chinese did not benefit as much as the Americans from orthographic regularity, it does appear that their mastery of the English writing system is not complete" (p.401). Haynes and Carr predicted that "their relative inability to profit from predictable sequencing of letters in English would hamper these L2 readers when they need to discriminate longer, less familiar word strings or when they try to remember new words. This might affect their reading

speed, their overall comprehension, or their ability to learn new words from context" (ibid).

The predicted effects were tested in a further comparison of the groups on reading comprehension, reading speed, and ability to learn new vocabulary from reading, with the aim of finding the interrelation between orthographic knowledge and reading. Their results show that orthography effects correlate with reading comprehension and new word learning but not with reading speed. The researchers comment that "the really important contribution to processing made by orthographic knowledge does lie in the ability to discriminate effectively among potentially confusable word forms, rather than simply in the ability to process word forms rapidly" (p.415). Their findings, which show that orthographic knowledge still influence reading success among the Chinese college students who had been studying English for many years, are perhaps alarming to the common assumptions among L2 reading researchers and teachers that the writing system is mastered easily and rapidly, quite early in the study of a new language.

According to Haynes and Carr, orthographic knowledge includes "knowledge of individual symbols and their identities; their common, uncommon, and impermissible sequencing patterns; and their mapping onto the speech code" (p.378). To them, orthographic knowledge comprises both visual decoding skills and phonological

recoding skills. They argue that due to the differences in the writing systems, English L2 readers coming from a logographic language background will be deprived of experience and exposure to the orthography of the target language, and thus are expected to be weak in the English orthographic knowledge. Their study did not extend to discussing the differential effects of L1 orthography on L2 visual and phonological processing skills.

The issue of processing skills and strategies being shaped by the nature of the orthography was further explored in Huang & Hanley (1994). They compared the performance in L1 of 137 primary children, one group from Britain (English L1), one from Taiwan (Chinese L1) and another one from Hong Kong (Chinese L1), on tests of phonological awareness, visual skills and reading ability. They find contrasting relationships between phonological awareness and reading ability among the three groups. Their results show that performance on phonological awareness tests was significantly related to the reading ability of the British children, whereas performance on visual skills tests was significantly related to the reading ability of the Chinese children (both the Taiwan and Hong Kong group). Huang & Hanley conclude that "learning to read Chinese seems to depend much less on phonological awareness skills than does learning to read English. Conversely, learning to read Chinese was much more closely related to performance on a test of visual skills" (p.96).

The processing skills developed in L1 may be transferred to L2 reading. Depending on the nature of the L1 orthography, its effects on L2 processing strategies may be different from one language type to another. The differential effects of L1 orthographic system on L2 word recognition strategies were examined in Chikamatsu's comparison study (1996) on native English and native Chinese learners of Japanese. Chikamatsu (1996) used lexical decision-making tests to compare the processing strategies used by the two groups when reading words in Japanese Kana. Japanese Kana is a new language for both groups to learn and in this case, both groups shared the same L2 experience as they learned Japanese at the same time. Japanese Kana uses a syllabic orthography which resembles neither the alphabetic orthography in English nor the logographic in Chinese. The visual familiarity and word length in test words were controlled to examine the involvement of phonological or visual coding in word recognition strategies. Results indicate that Chinese learners rely more on the visual information in the test words than the English group, and conversely, the English learners utilize phonological information more than the Chinese group. The results thus show differences in word recognition strategies when reading in L2. The significance, however, is found in the differences as reflections of the influence of the L1 writing systems. The groups transferred their L1 word recognition strategies to

read L2. However, the results in this study do not show whether the transfer facilitates or inhibits L2 word recognition.

Koda (1998) examined the effects of L1 alphabetic experience on phonemic awareness and decoding strategies in L2. Her experiment focused on comparing various aspects of phonemic awareness between Chinese and Korean ESL learners. Her hypothesis is that L1 alphabetic experience will lead to the development of L2 phonemic awareness and decoding skills. The Korean speakers read their native language in Hangul, which is a non-Roman alphabetic script, while the Chinese-speaking Taiwanese in logographic characters and have no alphabetic experience in their L1. Quite different from the research reported above, her test results show no significant difference in phonemic awareness, decoding performance and comprehension scores between the two groups. But there are strong interconnections between phonemic awareness and comprehension among the Korean ESL learners, while no such direct relationship occurs among the Chinese. The self-reporting procedure also indicates the Korean speakers consciously utilise their phonemic awareness consistently during decoding across tasks, while the Chinese speakers consciously vary their use of phonemic awareness in tasks posing different processing requirements. Koda concluded that "while differential L1 orthographic experience is not directly associated with L2 phonemic awareness, variations in prior

processing experience may engender the use of diverse phonological processing procedures and, thus, account for qualitative differences in processing behaviours" (p. 210). The findings in this study add supporting evidence to the effects of L1 orthography to L2 reading.

The effects of L1 transfer were studied in Akamatsu (1999), with a different research paradigm. She used the case alternation paradigm and compared the reaction time of three groups of fluent ESL readers (Iranian, Chinese and Japanese) against a control group of native readers of English in word naming tasks with visually distorted words as stimuli with the aim of identifying the possible effects of different first language orthographic characteristics on word recognition in English. It was hypothesized that if one is sensitive to alphabetic orthography, the visual disruption of word-shape cues should not affect one's sensitivity to sequences of letters in words. Results show that the Chinese and Japanese groups (the non-alphabetic L1 groups) were more influenced by case alternation than the Iranians, indicating that the non-alphabetic L1 groups relied more on visual strategies for decoding than the alphabetic L1 group. Akamatsu suggests that "the word-recognition mechanism established for a particular orthography hinders one from creating another word-recognition mechanism which processes words of a different type of orthography in a native-like manner... ESL readers whose L1 is not alphabetic may

not be able to acquire native-like sensitivity to sequences of the constituent letters in a word" (p. 399).

The cross-linguistic transfer effects of non-alphabetic L1 orthography on L2 word reading was reported in Wade-Woolley (1999). The experiment investigated the phonological and orthographic processes of two groups of second language readers of English. The two groups were young adults, one group was native speakers of Russian and the other was Japanese. They were compared on a number of cognitive and linguistic reading-related tasks. The two languages, Russian and Japanese, are examples on each end of the orthographic depth continuum, with Russian being a shallow orthography and the Japanese Kanji a deep orthography. The two groups were matched on their English reading level. They showed equal proficiency in word recognition, pseudoword decoding and pseudoword repetition, which is a test of basic working memory capacity in L2. In terms of specific phonological and orthographic processes, the two groups showed their strength in different tasks. The Russian showed their superior phonological skills in their accuracy at phoneme deletion, whereas the Japanese were more accurate at recognizing legitimate spelling patterns in English. The performance of the Japanese group in pseudoword decoding is at a level equal to that of the Russians. Wade-Woolley suggest that the Japanese group's equal performance as the Russian group in pseudoword decoding may be attributed to

their reliance on their orthographic skills to compensate for their phonological awareness weakness. But we have to be cautious on interpreting the effectiveness of this compensation as Wade-Woolley carefully noted that "even if the Russians and Japanese were in fact decoding pseudowords at the same level, that level may not be particularly high. Without an English-speaking control group matched on word recognition there is no real standard by which to establish a valid level of reading skill for L2 learners" (pp. 464-465). In this sense, the orthographic skills may not be able to fully compensate for weaknesses in phonological skills.

Wade-Woolley also points out that the age of the L2 learners, their level of L2 proficiency and the influence of literacy in L1 are all likely to be variables of the impact of phonological awareness on reading performance. For example, she suggests, "the causal relationship may be particularly strong at early stages of development, but become attenuated at a later point" (p.465). If the impact of phonological awareness on reading development is stronger at early stages, then it will also be more effective for phonological training to be conducted at early stages too. To summarise, results in this research not only confirm the cross-linguistic influence of L1 orthography on processing skills for L2 word recognition, but also bear implications on remedial or intervention training design. It follows that such training should be provided at an early stage of literacy development.

The findings on the different processing skills required for reading different orthographies provide a useful referential framework for further research focusing on the difficulties faced by Chinese readers learning to read English as a second language. Holm and Dodd (1996) compared the performance of 40 university students from The People's Republic of China, Hong Kong, Vietnam and Australia in terms of phonological awareness, word reading and spelling, trying to examine the relationship between first and second language literacy. Among the subject groups, the Hong Kong students are the only ones with non-alphabetic first language literacy. The students from the People's Republic of China had learned the Chinese logographs through an alphabetic system employing Roman letters called Pinyin. (Details of the Pinyin system will be discussed in Chapter 5.) The Vietnamese language is an alphabetic language itself using Roman letters, although the phoneme represented by the grapheme is not always the same in English as it is in Vietnamese.

Results show that the Hong Kong students had limited phonological awareness compared to the other groups. They had difficulty processing nonwords because of their poor phonological awareness. The Hong Kong students were found to be consistently over-relying on the visual strategy for decoding and as a result, they were not able to decode words they had not encountered before. Holm and Dodd's results add evidence to the influence of the logographic first language leading to reliance on a

visual strategy. Holm and Dodd conclude that "the differences between the subject groups and especially between the pinyin-taught Chinese and the non-pinyin-taught Chinese clearly show that L1 skills are transferred in ESL learning" (p.142). The Chinese subjects who had learned pinyin had developed phonological awareness at the lower levels were able to transfer these skills to English; whereas the Hong Kong Chinese had no phonological awareness to transfer. Holm and Dodd (1996) call for explicit instruction for developing phonological awareness and highlight that "it cannot be assumed that because subjects can read and write in English they have phonological awareness" (p. 142). Although phonological awareness may not be a pre-requisite for the achievement of literacy in English, as shown by the Hong Kong subjects, Holm and Dodd emphasised that training in phonological awareness allows the use of phonological processing for analyzing new words. This additional skill removes the difficulty of connecting aural and visual vocabulary so that a phonological route can be available to the subject when new words are encountered.

A similar study but with different results was conducted by Jackson, Chen, Goldsberry, Kim and Vanderwerff (1999) with specific focus on the effect of L1 orthography on L2 word identification and text reading. They compared three groups of EFL readers, Korean, Chinese from Taiwan and Chinese from Hong Kong, to two groups of American L1 readers, one group was graduate students and the other group

was Grade 8 students. All the Asian EFL readers were either undergraduate or graduate students in an American university. They were tested for reading speed in five different conditions, namely, simple text, text with mixed cases, text with pseudo-homophones, text with long words and text with complex syntax. The results of all the three EFL groups were different from the native speaker groups. They all read very slowly, even much slower than the eighth graders. Their reading was more impaired when orthographic cues were disrupted by mixed case print or pseudo-homophone spellings. Contrary to previous findings, there was no significant difference found between the Taiwanese and the Korean. Results of the Hong Kong group were better than these two EFL groups, though still worse than the eighth graders.

The fact that all the three Asian groups read significantly slower than the American groups has ruled out the possibility that the difficulties are individual cases. The researchers suggest that the effect of L1 orthography on L2 reading fluency is "across, not within, language groups" (p. 371). In other words, the difficulties are related to the nature of the language that influenced that the learners as a group. L2 reading difficulties could be studied as difficulties faced by the particular language groups rather than individuals.

Two sources of such difficulty were suggested by the researchers, (a) lack of efficiency in encoding English phonology and identifying GPC's, and (b) lack of efficiency in processing the Roman alphabet and the specific letter patterns of English orthography. By re-examining the results reported in this study, the researchers found that each of these two sources had different effects on the three EFL groups. Although all the three groups had difficulties in reading mixed case and pseudo-homophones texts, the level of influence was different among the groups. For both the Taiwanese and the Korean groups, mixed case text had the strongest effect on their reading speed, whereas the Hong Kong group was affected most by text with pseudo-homophones. It seems that the Taiwanese and the Korean groups had the biggest difficulty in processing the Roman alphabet and the Hong Kong group's biggest difficulty can be found in encoding English phonology.

Moreover, the results of the Korean and Taiwanese groups were inferior to the Hong Kong groups and this was attributed to the earlier and more extensive exposure of the Hong Kong group to both spoken and written English. On the other hand, the Taiwanese and Korean groups' early exposure to a non-Roman alphabet (Taiwanese *zhu-yin-fu-hao* and Korean *hangul*) did not give any advantage to these groups when learning to read an alphabetic second language such as English. One possible reason was that the scripts of both *zhu-yin-fu-hao* and *hangul* have presentation modes and

spatial arrangements different from that of English. Therefore the researchers concluded that "the nature of an EFL reader's L1 orthography may be less important than the timing and nature of the reader's exposure to a second language and writing system." (p. 375).

This conclusion, which is based on the superior performance of the Hong Kong group in reading speed when compared to the Taiwanese and Korean groups, seems somewhat different from the findings in Holm & Dodd (1996). The latter study reported that EFL readers from Hong Kong were weak in phonological assembly skills which in turn affected their oral reading ability, particularly non-word reading. However, it has to be noted that reading ability was conceptualized differently in the two studies. Jackson et al. (1999) compared reading speed in different text conditions whereas Holm & Dodd (1996) focused on word level reading in terms of phonological skills, oral reading and spelling. Nevertheless, the pattern of oral quality scores, which are indicators of accuracy in pronunciation, found in Jackson et al. shows that EFL readers from Hong Kong are weak in phonological skills as they scored the lowest despite the fact that they can read faster that the Taiwanese and Korean subjects in the study.

But if we compare the research design, it can be seen that the study of Jackson et al. compared Hong Kong and Taiwanese L2 readers, whereas in Holm & Dodd's

study, the comparison was drawn between Hong Kong and Mainland (PRC) Chinese L2 readers. This can be the possible reason for the different conclusions in the two studies. Both the Taiwanese and the Mainland Chinese were exposed to the L1 literacy experience of using a transliteration system to mediate their L1 reading. But *zhu-yin-fu-hao* used in Taiwan, is a non-Roman alphabetic system, whereas in PRC, a Roman alphabetic system, *pinyin*, is used. In this sense, results of both studies are consistent as early exposure to a Roman alphabetic script is important to the subsequent EFL reading development. The mainland Chinese group has developed better phonological skills than the Hong Kong group due to their exposure to *Pinyin* when learning to read Chinese.

While most of the comparison studies were conducted with adult learners, Wang and Geva (2003) studied the literacy development in ESL primary level children in Canada. They compared a group of Grade 2 Chinese children coming from Cantonese speaking families in Canada to a group of native English speaking children of the same Grade level. Their study focused on studying the early impact of L1 literacy exposure on L2 literacy acquisition. The two groups' performance on three spelling tasks was compared. The two groups did not differ significantly in real word spelling, but the gap between real word and pseudoword spelling was much greater for Chinese children than L1 children. The performance of the Chinese children was severely

impaired when the words were unfamiliar or unknown to them even though the orthographic structures of those words were regular. The Chinese children encountered difficulty in mapping the phonemes to graphemes in spelling. This strong lexicality effect found in Wang and Geva's study is converged with Holm and Dodd's (1996) findings although the subjects in the latter study were adult Chinese learners. Wang and Geva explain the Chinese children's poor performance in pseudoword spelling with the fact that these children began their exposure to English later than the English L1 children. Therefore these children were probably slower to master sound-letter mapping rules in English. Moreover, the Chinese children's difficulties in phoneme-grapheme mapping was attributed to the negative transfer of processing strategies developed from a logographic orthography to an alphabetic L2 orthography.

4.3 Summary

The orthographic nature of a language is influential to the development of the readers' processing skills and strategies for reading in that language. The processing skills developed are thus specific to language types. Research shows that different orthographies pose specific cognitive demand in the decoding process and therefore require readers to develop different processing skills and strategies correspondingly. However, it is also natural that readers, when facing the challenge of reading in a new

language, try to apply the previously developed processing skills and strategies to help them decipher the new codes. Owing to the transfer, L2 readers' prior reading experience in their L1 may facilitate or hamper their L2 reading development, depending on the extent of the differences between their L1 and L2.

In the case of Chinese L1 learners of English, because of the orthographic distance between the Chinese and the English writing systems, the processing skills and strategies that Chinese readers developed in the L1 literacy experience are different from those needed for processing the English orthography. Chinese learners of English are found to have decoding difficulties when learning to read English.

The difficulties faced by Chinese L1 learners, as reviewed above, are two-fold: their limited orthographic knowledge, and their different and perhaps inappropriate word recognition skills developed in the process of L1 reading acquisition. First, they are not familiar with the English orthography because of the different language background, and second, they have not developed the appropriate decoding skills for L2 reading. Learning this new writing system is totally different from their L1 literacy experience in Chinese. Given the differences between the logographic Chinese writing system and the English alphabetic orthography, there is little orthographic knowledge that they can transfer from their L1 to the learning of L2. Moreover, the Orthographic Depth Hypothesis predicts the varying degree of reliance on phonological decoding in

relation to the orthographic depth of different languages. The logographic Chinese writing system requires readers to rely more on visual cues for decoding and thus Chinese L1 readers are trained for visual and holistic decoding in their L1 literacy development process. As a result, Chinese L1 readers are not used to phonological assembly processing skills and are expected to be weak in such skills. Their deficiency in phonological skills often delays their development in learning to read English, which is sound-based and requires readers to analyse the grapheme-phoneme representations within words in the decoding process.

To further understand the problems of the Chinese L1 learners of English, the writing system of the Chinese language will be examined in the next chapter. Previous research (Read et al. 1986; Holm & Dodd 1996) found that ESL learners from China tend to have higher level of phonological skills when compared to ESL learners from Hong Kong. It is suggested by the researchers that the transliteration system, Pinyin, used in China for helping young learners to read Chinese characters gives these learners exposure to an alphabetic orthography and develops their phonological skills which can then be transferred to their learning to reading English as a second language. Therefore, the processes of how Chinese and English are learned as the first and second languages in China and in Hong Kong will also be discussed.

5. The Chinese orthography

5.1 An overview

Chinese is a logographic writing system in which a written symbol stands for a morpheme, a minimal meaningful unit of the language (Wang 1973; Sampson 1985; Taylor 1981; Jackson, Lu & Ju 1994; Huang & Hanley 1994). Morphemes in Chinese are co-extensive with syllables, that is, each morpheme is one syllable long. In this sense, the Chinese writing system can also be described as morpho-syllabic in which a written symbol represents a morpheme and a syllable (Haynes & Carr 1990; Hoosain 1991; Mair 1996). As each morpheme is one syllable long, there is no case such as *feather* or *elephant* where a single meaning-unit contains more than one syllable, or conversely, there is no inflecting case such as /*s*/ of *cats* or /*ed*/ of *jumped* where a meaning-unit corresponds to a fraction of a syllable. At the same time, the phonetic information in Chinese characters is defined at the syllable level and not at the grapheme-phoneme level, the phonetic component in a Chinese character maps onto a syllable, rather than onto a phoneme. Therefore, the Chinese writing system does not possess the segmental structure that is fundamental to alphabetic writing systems. In this sense, the principle of phonological assembly in alphabetic systems, whereby, for example, /k/-/æ/-/t/ is

assembled to make /kæt/ in English, does not apply when reading a Chinese character (Wang & Geva 2003). Since Chinese, like any other language, has thousands of morphemes in its vocabulary, the Chinese script, therefore, includes thousands of visual symbols. The minimal visual unit in Chinese is a character. Each character represents a morpheme and a syllable. All characters are written with a combination of eight types of stroke and a character can contain from 1 up to 29 or more strokes (Chen 1992). One character may consist of several strokes, but the strokes do not have individual semantic and phonetic entities as do English letter or letter groups. Each character occupies a square space; as a result, all the characters of a sentence are written with equal spacing. Here is an example:

Figure 5.1: Universal Declaration of Human Rights, article 1

人人生而自由在尊嚴和權利上一律平等。
All human beings are born free and equal in dignity and rights.

One of the most characteristic features of Chinese writing is its extremely high incidence of homophones. Each Chinese morpheme is one syllable. But in the historical development from the Old Chinese period to the Modern Chinese period, a large number of sound-changes occurred which resulted in massive losses of the important phonological distinctions of many Chinese characters. This means that there are now

many times more morphemes than phonologically-possible syllables. The average syllable in modern Chinese will now stand for perhaps half a dozen different morphemes (Sampson 1985: 168). For example, the syllable */lèi/* can be represented by 累, 淚, 類. All the three characters have exactly the same pronunciation (same syllable, same tone), but each character represents a different lexical morpheme and there is no relationship in meaning among them. Although it is not infrequent that morphemes which sound the same or similar are written with partly similar forms, there is no rule about this. The homophones listed above are examples. Therefore, the idea that from a knowledge of the pronunciation of a word one should be able to make a good guess at how to write it would not be fully applicable to Chinese. However, in modern Chinese, the ambiguity created by the homophonic relationship between spoken syllables and written symbols is overcome by the combinations of two morphemes to form a compound word (Taylor 1981), each syllable, when stands alone, may be quite ambiguous but each can disambiguate one another when taken together. For example, */lèi/* can be expressed as 累積 (*lèi jī*) which means *cumulative* as distinguished from 眼淚 (*yǎn lèi*) which means *tear drops*. However, the immense ambiguity of homophonous morphemes exists only in their spoken form. In writing, such ambiguity is entirely eliminated, as each morpheme is represented by its own distinctive logograph. Meaning is often clarified by the visual

distinctiveness of each character. As Chinese contains a great many homophones, the character, which is the written form of the language, often conveys more precise information than a spoken syllable.

Characters, or logographs, are devised to represent meanings primarily and sounds secondarily, while phonetic signs, such as the alphabet, are devised to represent sounds primarily and meanings secondarily (Taylor 1981:16). In China, the sounds of the language changed across different regions and diverged into different varieties in the country. There are about six to eight main varieties, each with sub-varieties, and some have diverged so widely that speakers of different varieties can not understand each other. For example, a Pekingese from the north can not understand the speech of a Cantonese from the south, or vice versa. In many cases, even people from the same province but different cities or villages cannot understand each other.

In fact, whether the varieties should be called 'languages' or 'dialects' is not clear. Wardhaugh (1992) states that "all languages exhibit a great deal of internal variation" and that "each language exists in a number of varieties and is in one sense the sum of those varieties" (p. 22). But exactly how do we decide what is a language and what is a dialect of a language? Trudgill (1992) defines dialect as "a variety of language which differs grammatically, phonologically and lexically from other varieties, and which is associated

with a particular geographical area and / or with a particular social class or status group" (p. 22). As mentioned in Trudgill's definition, there are different factors affecting the division between the two terms. Dialects can be seen as regional variety of a language, non-standard version, an expression of political, and / or cultural or literary tradition. The confusion is well summarised by Haugen (1966, cited in Wardhaugh 1992:24) that the two terms "represent a simple dichotomy in a situation that is almost infinitely complex". In the case of China, all common Chinese people will claim that they share the same language, although speakers of Cantonese and speakers of Mandarin are like German and Dutch, they will not be able to converse. However, if the speakers are literate, they will be able to communicate through a shared writing system. The varieties are mainly divergent pronunciations of the same morphemes, and these divergences are not reflected in the written characters. Moreover, with strong social and cultural tradition among the speakers, the varieties in the spoken form are therefore considered as different dialects of Chinese, not different languages.

The written form of modern Chinese, which is known as 'Mandarin Chinese' is a universal medium of written communication in the country in spite of the spoken varieties in different regions. Although there are various dialects in use in China, there is only one written language shared by all speakers. The variations are found in the

pronunciations. The Chinese writing system is meaning-based, in which meaning is directly mapped onto the characters, which are the minimal units of writing. The pronunciation of the characters may change in time and across the different regions in the country, but the meaning attached to the characters does not change. Differences in vocabulary and grammar between the regional dialects are small, so that there is no difficulty for both a Pekingese and a Cantonese to understand the same piece of Chinese writing. Therefore a written text may be read aloud in different ways, but it can be understood in the same way by any Chinese person. Despite the huge varieties of spoken forms, the logographic nature of the written language well serves the country politically by providing a common writing system which can be understood by all, and thus unifies the country in the linguistic perspective.

5.2 Internal structure of a Chinese character

In the Chinese writing system, there are six different classes of script, known as *liù shū* (六書), four of which are based on graphic structure and two on usage. The classification constitutes six different principles of character formation or use (Coulmas 1991: 98-99; Boltz 1996: 197).

1. Pictographic principle (representing the form) – unit characters that represent simple

pictures of concrete objects, e.g. 日 (*rì*) 'sun', 月 (*yuè*) 'moon'.

2. Simple ideographic principle (indicating the matter) – characters that are graphically designating abstract notions, such as 上 (*shàng*) 'up', 下(*xià*) 'down'.

3. Compound ideographic principle (conjoining the sense) – compound characters with the meaning that reflects the combination of graphic constituents in the character, e.g. 信(*xìn*) 'trustworthy' is formed with 人 (*rén*) 'person' and 言 (*yán*) 'speech'.

4. Phonetic loan principle (forming the sound) – compound characters comprising a semantic determinative and a sound-bearing element which is borrowed from another homophonous character, e.g., 征 (*zhēng*) 'mount a military expedition' borrowed the sound from 正 (*zhēng*) 'straight'. There is no meaning relationship between the two characters.

5. Mutually interpretive symbols (redirected characters) – it is a principle of use which can be described as semantic extension: one character can be combined with other characters to form different compounds. Its pronunciation changes in the compounds when the meaning of character is extended or redirected. For example, 樂 is pronounced as (*lè*) by itself and generally carries the meaning of happiness. It maintains the same pronunciation as in 快樂 (*kuài lè*) 'happiness'. But the pronunciation of the same character 樂 changes to (*yuè*) as in 音樂 (*yīn yuè*) 'music'. In this new compound, the original meaning of happiness is redirected, and therefore a new pronunciation is given. In this case, the pronunciation of the character 樂 is determined by its combination with other characters.

6. Borrowed characters – it is also a principle of use by which a character is used for representing another homophonous or nearly homophonous character with different written form, e.g 會 (*huì*) 'meet' is used for 匯 (*huì*) 'gather' as in 會合 (*huì hé*) 'joining together'. In other words, 會合 (*huì hé*) and 匯合 (*huì hé*) carry the same pronunciation and meaning, and as 會 (*huì*) and 匯 (*huì*) are homophones, 會 (*huì*) was borrowed to form the compound 會合 (*huì hé*) and can be used interchangeably with 匯合 (*huì hé*).

According to the first four principles, which are principles of graphic structure,

Chinese characters can be categorized into two types: simple characters and compound characters. Characters constructed by the first two principles are simple characters, whereas the third and fourth principles produced compound characters. The evolution of the Chinese writing system is basically a consequence of expanding the 'semantic-phonetic' compound principle for character construction. Compound characters would consist of two parts – a phonetic –the sound element, standing for a family of near-homophones – and a signific, also known as radical or semantic classifier, an element showing the semantic category into which the character falls. The following examples in Figure 5.2 illustrate the formation of semantic-phonetic compound characters based on the same phonetic.

Figure 5.2: Formation of characters with the same phonetic (Coulmas 1991: 101)

Almost every simple character acts as phonetic in at least one or two compound characters, and in a dozen or two dozen compound characters at most (Sampson 1985: 154). A simple character may serve as a phonetic in some complex characters and as a

classifier in others. For example, the character 刀 (*dāo*) 'knife' is the classifier of more than eighty compounds, such as 剪 (*jiǎn*) 'cut' and the phonetic in more than a dozen, such as 到 (*dāo*) 'arrive'. According to the New China Character Dictionary, where 8075 Chinese characters were examined and analysed, 1348 (17%) of the characters may function independently, but 6542 (81%) are made up of a phonetic component plus a semantic "radical" (Mair 1996:201). Karlgren (1923, cited in Coulmas 1991:102) has identified 1260 phonetics among some 6000 most common characters. The great Kang Xi dictionary of 1716, which is the standard authority for the whole range of classical Chinese literature, used 214 classifiers for organising 40,000 characters which it comprises. The same list of classifiers, representing the range of radicals, is still in use today as the basic principle for the organisation of dictionaries.

5.3 Symbol-sound correspondence

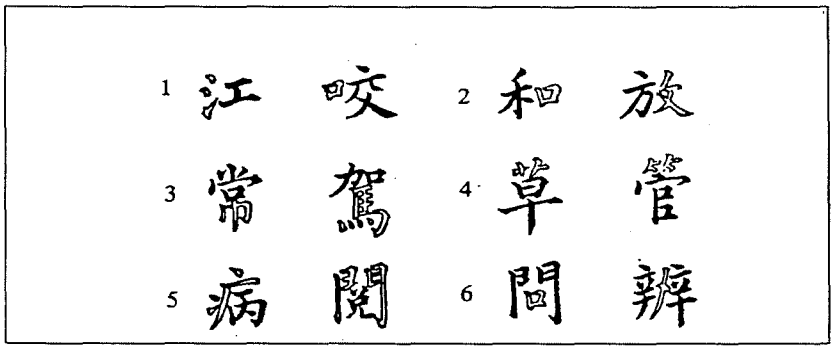
Whereas an alphabetic system uses a small number of abstract elements to represent the phonemic structure of the language, Chinese characters are represented by a large number of different visual symbols. These symbols, when occurring by themselves, serve the sense-determinative function of designating a character; but when occurring as parts of other characters, they serve the sense-discriminative function of differentiating the

composite character from others that are similar. Many sinologists and researchers (Sampson 1985; Coulmas 1991; Mair 1996; Hoosain 1991; Huang & Hanley 1995) have pointed out that neither the semantic nor the phonetic components in the Chinese characters provide exact indication of meaning or sound, but only give an approximation. Chinese speakers who learn to read and write essentially have to learn the graphs case by case; both the radicals and phonetics will give them many hints and clues to help them remember, but the information supplied is far too patchy and unreliable to enable them to predict what the character for a given spoken word will be, or even which spoken word will correspond to a character that he encounters for the first time. In about 25% of semantic-phonetic compounds, the phonetic gives the full pronunciation of the character (Hoosain 1991).

Huang and Hanley (1995) also pointed out that there are a variety of reasons why the phonetic does not always provide a reliable guide to the pronunciation of the character to someone who had never seen the character before in print. First, the pronunciations of some characters have changed over the centuries such that the phonetic no longer resembles the character phonologically. For example, the phonetic of 倚 (*yǐ*) is 奇 (*qí*), which is different from the pronunciation of the compound character. Second, there is no general rule for positioning the phonetic (or radical) in the compound. Although the

phonetic usually appears to the right of the radical (80%), this is not always the case. The following examples cited by Coulmas (1991, p. 102) illustrate the various possible positions of phonetics and radicals in compound characters.

Figure 5.3: Possible positions of phonetics and radicals in compound characters



(The radicals are shown in traced lines. The phonetics are shown in solid lines.)

Consequently, the reader may inappropriately attempt to use the radical as the phonetic cue for guessing the pronunciation of an unfamiliar character. Third, the nature of the relationship between the phonetic and the character itself varies; it may rhyme with or be homophonic with the character that is being written, and in some cases, a group of Chinese characters may be very similar in shape but stand for morphemes whose pronunciations are entirely unrelated (Sampson 1985: 148). For examples, 傅 (*fù*), 溥 (*pù*) 博 (*bō*), all share similar components but the first two characters rhyme with each other while the last one has a different pronunciation.

Because characters cannot be sounded out letter by letter and because the sublexical

phonological information is often inconsistent and unreliable, character identification is expected to rely on the graphic information which distinguishes the characters from one another. One view of character identification is that characters are identified by direct linkage of orthographic with semantic information. This view is compatible with the dual-route model of word identification proposed by Coltheart (1978). His model was used to describe word identification in alphabetic orthographies in which word recognition is normally sound-mediated. But in the cases of identifying irregularly spelled words, there will be direct mapping between the written word and its meaning. However, Perfetti and his colleagues (1992), based on their backward masking and priming studies, argue that phonological coding is universally important in reading. "[Reading] across writing systems, ... automatically lead to phonological activation" and "writing systems constrain the extent ... but not whether this activation occurs" (p. 231). Their results and results from other studies (Perfetti and Zhang 1992; Cheng 1992) indicate that during the process of character identification, activation of graphic information occurs well before activation of phonological information, although the exact time at which phonological information becomes available in the process remains unspecified. In this sense, Chinese characters might be more likely than English words to be remembered in terms of a visual code rather than, or in addition to, a phonological

code, although activated phonology serves memory and comprehension.

5.4 Learning to read Chinese characters

Although the characters are made up of recurring components, their shapes and proportions change in combination, hence each character is a distinct entity and must be stored as a separate unit in memories. In reading Chinese script, one has to identify each word as a visual *Gestalt*, a whole with its own distinctive shape. As Chinese characters are represented by a large number of different visual symbols, learning to read the Chinese logographic script requires a lot of time to commit the many graphs to memory; whereas learning to read a phonographic script requires analytic intelligence to split words into sounds (Sampson 1985: 163).

There are 40,000 characters listed in the Kang Xi dictionary, but many of the characters are rarely used or have become obsolete in Modern Chinese. Statistical studies (Mair 1996: 200) in the last two decades showed that 3,800 characters cover approximately 99.9% of all occurrences in typical Chinese texts, whereas 5,200 cover 99.99%. Therefore, an average literate Chinese would probably not know, and would not need to know, more than five or six thousand characters at most. The Chinese education system recommends that children should have learnt to recognise over 470 different

characters by the end of their first year at school, 2,000 by the fourth year in primary school and 4,000 by the time they are 12 years old (ibid).

Very little research has been conducted on the word recognition development of Chinese learners. Among the few, Van Zian (1962, cited in Taylor 1981:13) studied first graders learning characters in a Shanghai primary school in China and identified three stages of their learning process in the first year of formal schooling. In the first stage, the children related previously learned sound-meaning associations with only the global shape of written characters. In the second stage, they associated sound-meaning with parts of characters and often wrongly mixed up parts from similarly shaped characters. In the third and final stage, they were able to make the correct associations between sound-meaning and the correct strokes of characters. It was also found that character learning throughout the three stages was dominated by the visual aspects of the characters. Most of the errors (79%) made in a dictation-recall test were visual. Confusions with semantically or phonologically similar words were few, 8 and 13% respectively. The findings demonstrated that recognition of characters relies heavily on visual discrimination among characters.

5.5 Learning to read Chinese in Mainland China

With the founding of the People's Republic of China in 1949, linguistic reforms of the Chinese language were major items on the government's agenda for the modernisation of the country. To signify unification, Putonghua (meaning common language) which is based on spoken and written form of Mandarin (Beijing pronunciation), was made the official language. It became the language in the media, in all government offices and in schools. It is the medium of instruction for all subjects except foreign languages. However, the major obstacle to promote this official language is that China is a vast country and there are over a hundred dialects used in different areas. The government's target is to enable people in all over the country to communicate in this common language. Despite the variations in spoken form, all Chinese people use the same writing system. Therefore, they need not learn Putonghua as a new language, but only need to adjust their pronunciation.

To facilitate the learning of Putonghua, a new Romanisation system (i.e. a system for transcribing the sounds of Chinese characters in terms of the Roman alphabet) called Pinyin was promulgated in 1958. The Pinyin system transcribes the phonological code of each character into a string of Roman letters, based on highly regular grapheme-phoneme conversion rules. The logographic characters are still in use but the pronunciation of the

characters is transcribed into Roman alphabet based on the pronunciation of Putonghua. The Pinyin system consists of 25 letters of the Roman alphabet and the four tones marked by the diacritical marks of ¯, ´, ˇ, ` , placed above the main vowel. The minimal unit is a syllable, which also represents a character. For example, 天 (sky) is transcribed as (*tiān*). Without the Roman transliteration, there is no clue for the learner to sound out the character if the pronunciation is not learnt before. But with the Romanisation, learners can apply the GPC rules to access the phonological code of a character even if it is an unfamiliar one.

Pinyin is similar to the use of phonics to help children identify the English words, except that some of the GPC rules are different from those used in English. Within China, Pinyin is used for purposes mainly as a device for introducing small children to the activity of reading, and also as supplement to ordinary Chinese characters in contexts such as road signs, name of places and shops, and also slogans on posters. Pinyin is therefore a tool to ensure that Chinese people from different regions, speaking different dialects, will learn to speak and read in Mandarin. The Romanisation or pinyin is always shown under the Chinese characters for the benefit of semi-literate and / or dialect-speaking readers so that they may be able to identify from the Romanisation the character they are not familiar with, or to learn the standard pronunciation of the

character which they may pronounce differently at home. The following is a slogan shown with Pinyin:

Figure 5.4: Universal Declaration of Human Rights, article 1

rén rén shēng ēr zì yú zaì zūn yán hé quán lì shàng yí lü ping děng. 人 人 生 而 自由 在 尊 嚴 和 權 利 上 一律 平 等。 All human beings are born free and equal in dignity and rights.

During the first 4-8 weeks of schooling (Grade One), before children begin to learn to read the logographic Chinese characters, Pinyin is taught intensively in class. Both the GPC rules with different tones, as well as the phonemic skills such segmentation and blending are taught. Pictures are used to help children relate the Pinyin transliterations to their oral vocabulary. Figure 5.5 shows three pages extracted from a Grade One textbook (語文 (yǔ wén) 'Language' Vol.1) which illustrate the process of children learning to read.

The three pages extracted from the textbook represent the three stages of learning to read the Chinese characters in the first semester. Initially, as shown on the left, the Romanisation of single characters with the same pronunciation (/ba/, /bu/, /po/, /pi/) but different intonations is taught in groups of onset and rimes. The meanings of the characters are illustrated with pictures. As children are getting familiar with the Pinyin of single characters, the next stage is to ask them to read the Romanisation of compound

words and simple expressions. This is illustrated by the middle page in Figure 5.5. At this stage, no Chinese characters are introduced. Only the Romanisation is shown and the meaning is illustrated by pictures. The four lines below the pictures are simple sentences. By the end of this stage, children should have mastered the phonemic skills and be able to read out the sentences in Romanisation. The next stage (shown by the page on the right) is the introduction of Chinese characters. Simple characters are shown with Pinyin. Children are guided by the teacher to assemble the phonological code of each character and match it with the written code. In this way, learning to read Chinese characters is mediated by Pinyin. Gradually, more Chinese characters are shown in the text and with the aid of Pinyin, children can sound out the characters to identify the meaning and memorise the corresponding written code. From this stage onwards, Pinyin is displayed side-by-side with each character but eventually children are expected to identify the character directly from the written code. After the first year, when some common words become sight vocabulary, Pinyin of those common words in textbooks and reading materials will gradually be phased out. From Grade three onwards, Pinyin will only appear with new vocabulary, as an aid to help students identify the unfamiliar character with the phonological code.

Figure 5.5 Sample units from text book: 語文 (yǔ wén) 'Language' Vol.1

Source: 人民教育出版社語文一室
'People's Publishing Company Language Team 1'

In the teaching and learning process, Pinyin, as Romanisation of characters, is used as a tool to provide phonological access of the Chinese characters which in themselves do not provide reliable phonological information. It enables children to identify an unfamiliar word by means of sounding it out. Pinyin cannot and is not supposed to replace Chinese characters as there are high occurrences of homophones and meaning is still attached to the written form. With the aid of Pinyin, children can sound out new vocabulary, but the characters still need to be remembered as visual codes. As discussed

above, the nature of the orthography, which is logography with meaning mapped directly onto the written form, requires memorisation of individual characters, each as a separate and holistic entry.

The role of Pinyin in the learning process is to mediate character identification by means of providing a reliable phonological code. Unlike the Japanese Katakana, Pinyin is not part of the language and children are not allowed to write in Pinyin. In learning and using Pinyin, however, children are given opportunities to develop the alphabetic experience which is similar to the experience of using a language with an alphabetic script. To assemble the pronunciation of the Romanised character, e.g. 人 (*rén*) , they need to separate the onset (*/r/*) and rime (*/én/*) units, apply the grapheme-phoneme rules to sound out the units, and blend the sound units to form a syllable, which corresponds to the pronunciation of the character. These phonological skills, by nature, are not expected to be developed in the Chinese literacy experience. As Pinyin is based on the Roman alphabet, it is expected that the phonological abilities developed in the process of learning and using Pinyin will be transferred to the learning of an alphabetic language such as English as a second / foreign language (Read et al. 1986; Holm & Dodd 1996).

To test the effect of this transfer, Leong & Hsia (1996) conducted a study of phonological and morphological processing of Chinese university students learning

English. They tested 24 Putonghua speaking students who had learned Pinyin (PL group) and 58 Cantonese students who had no previous training in Pinyin (CL group). The students were tested on tasks requesting them to identify initial and final consonants in English and Cantonese words, and to break up English written words for the "best" syllabification. Results indicated that PL group performed significantly better than the CL group except for the English segmentation task for final consonants. The findings supported the hypothesis that segmental analysis is promoted in Chinese students who learn the phonetic system of Putonghua (Pinyin). The researchers concluded that the learning of Pinyin and segmental skills associated with the training in using Pinyin promote the learning of phonological and phonetic principles in English.

5.6 Learning to read Chinese in Hong Kong

Although Hong Kong is also a Chinese community, with around 98% of the local population being Chinese, the Chinese language is taught very differently in Hong Kong as compared to Mainland China. The development of language education in Hong Kong can be explained by its history. Hong Kong was a small port in the southern part of China until it was ceded to Britain and became a British colony in 1842. In 1997, the sovereignty of Hong Kong was returned to China and Hong Kong has become a Special

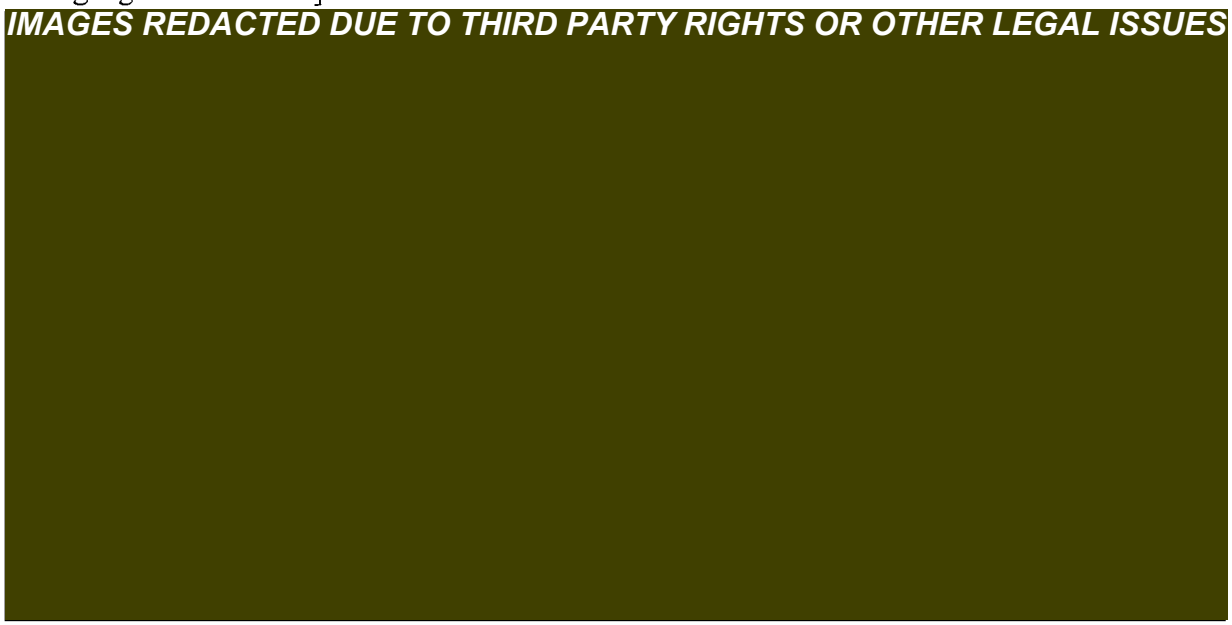
Administrative Region with a high degree of autonomy in local administration.

Over the years and particularly around 1949 when China was taken over by the Communist Party, large number of immigrants came to Hong Kong mainly from the nearby provinces in China. Most of them speak Cantonese, which is a Chinese dialect mainly used in Guangzhou (also called Canton in the past). But under the British rule, English was the official language in Hong Kong. Only in 1974 did Chinese (written Chinese and spoken Cantonese) become another official language, in addition to English. Both languages are taught in schools from kindergarten. The same language policy is still in use since the handover. Children in Hong Kong are taught to read Chinese characters with Cantonese pronunciation. Putonghua (the spoken form of Mandarin) is not commonly used in Hong Kong and was not taught in schools before 1997. As a British colony, there was no incentive for the Hong Kong government to follow the language policy in mainland China. Putonghua was seldom used in Hong Kong. After the return of the sovereignty to China, for social and political reasons, Putonghua has become more important in the society than before. It is the tool to communicate with the Mainland.

Despite the increasing importance of Putonghua as a medium of oral communication in Hong Kong, it is still not a compulsory subject in schools. Some schools may include Putonghua in their curriculum, some may not, depending on the availability of suitable

teachers in the school. As most people in Hong Kong are Cantonese speakers, it is difficult to find Putonghua teachers. Even for those schools with Putonghua in the curriculum, it is only taught as a foreign language, taking up 2-3 lessons per week. Unlike in schools in mainland China, Putonghua is not used as the medium of instruction in Hong Kong schools, not even for teaching the Chinese subject. Children continue to learn to read Chinese writing in Cantonese pronunciation. The way that Chinese writing is taught is also different. There is no standardised or official Romanisation system based on Cantonese. Therefore, children in Hong Kong are not taught to read Chinese with the mediation of any alphabetic representation of the characters. As Pinyin is based on Putonghua pronunciation, it is not applicable to Cantonese. Instead of learning to read Chinese with the aid of a Romanisation system like Pinyin, children in Hong Kong learn to read the Chinese characters with the "look and say" approach (Holm & Dodd 1996). Children learn the visual code and the phonological code of a Chinese character at the same time. In class, a character is usually presented visually first and then read aloud by the teacher. Children are told to memorise the phonological code and the visual code by rote learning. There is no Romanisation in the textbooks nor in other children's reading. Figure 5.6 shows some sample texts presented in a Grade one textbook (陳煒良 1988).

Figure 5.6 Sample units from textbook: *啓思中國語文一上 (下冊)* [Chinese Language Vol.1 Part II]



The three consecutive pages are taken from the first chapter of a second textbook used in the first semester of Grade One. As shown on the first page on the left, four short phrases with the theme of going to school are presented vertically, which is the traditional way of presenting Chinese text. The characters will be taught one by one and children will be asked to memorise both the writing and the pronunciation. The second page contains explanations and exercises related to the grammar and usage of the phrases. The page on the right includes some oral activities such as asking the children to practise the grammar pattern with substitutions and also to describe to the teacher how they go to school. There is no explanation on the phonological elements in the characters and no instruction on phonological decoding. With the strong encouragement for visual decoding,

children will not have much experience developing phonological skills in the process of learning to read Chinese.

5.7 Learning to read English in Hong Kong and in China

Hong Kong has a much richer English environment than other cities in mainland China. It has been a British colony for 150 years, and English has been an official language all over the years. As a metropolitan city, English is commonly used in the business community as well as in the society at large. English reading materials, both for leisure and for study, are easily accessible. In schools, English is a compulsory subject. In fact children start learning English in kindergarten, although there is no formal curriculum at such level. English is formally taught in primary school Grade 1 (P.1) as a major subject. Each week, there are about 4 to 5 hours of English lesson on the timetable. The exact number of hours may vary from one school to another. The number of hours for English lessons in secondary school increases to about 5 to 6 hours per week. There are two types of secondary schools in Hong Kong, depending on their choice of the medium of instruction for subjects other than English. Some secondary schools in Hong Kong use English as their medium of instruction for all school subjects except Chinese. All the textbooks are written in English. The other type of secondary school uses Chinese

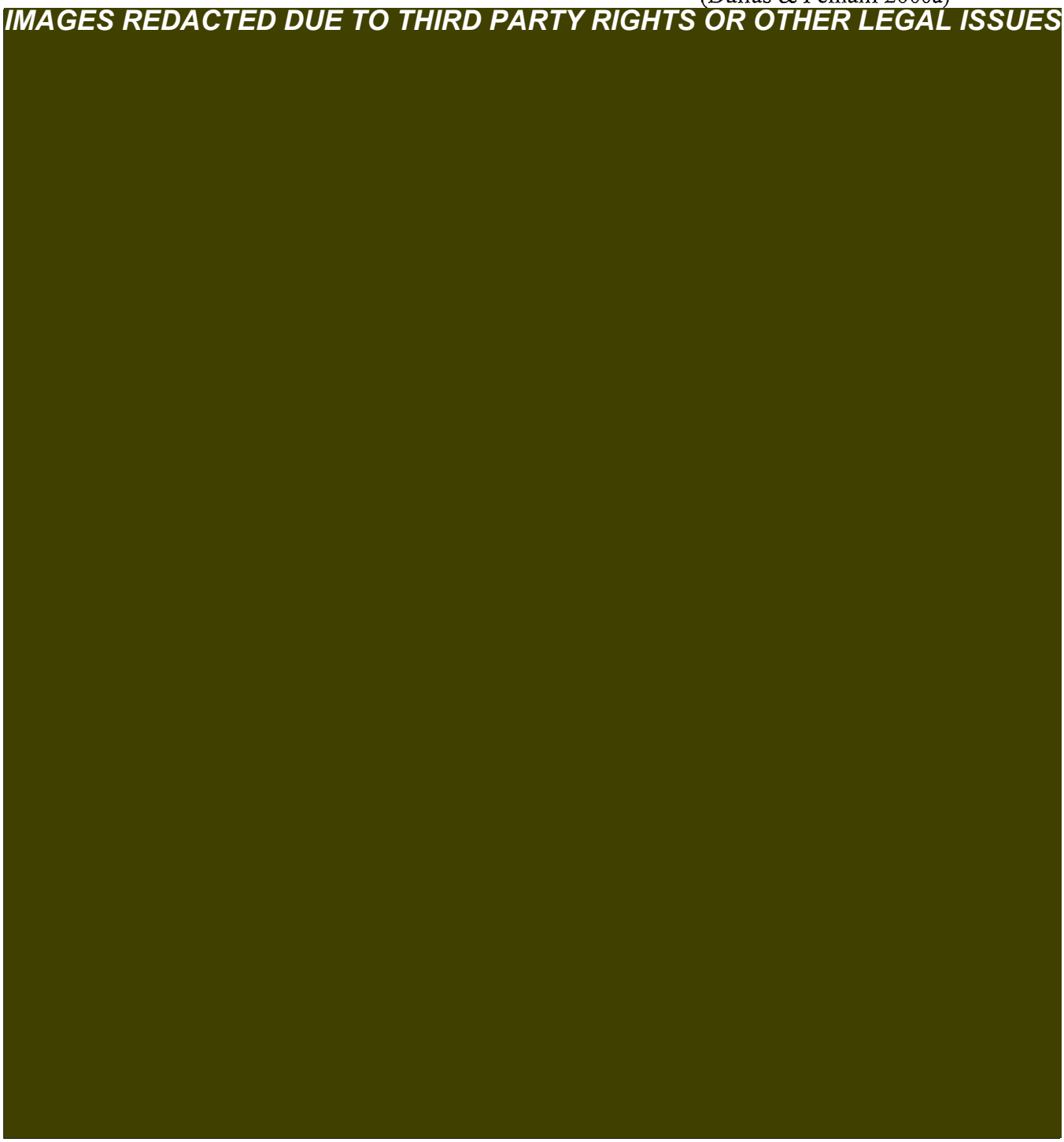
as the teaching medium and they use Chinese textbooks. However, even students in the latter type of school still need to read English references and supplementary materials. There are many opportunities for students in Hong Kong to use English both receptively and productively inside and outside classroom.

The English environment in most other cities in China is more confined to the classroom. English is first taught in P.5 as a foreign language. There are 4 hours of English per week in both primary and secondary schools. Apart from the English lessons, English is seldom used in other subjects, or in other contexts outside classroom. Reading materials in English are scarce, as foreign books are expensive and restricted for import. Language input comes mainly from the teacher and the textbook. Although the situation is improving as China opens up, the access to an English environment in China is still very limited. Students do not have much opportunity to be exposed to the language outside the English classroom.

Interestingly, in both Hong Kong and other cities in China, students are predominantly taught to decode English words with the visual approach. Perhaps this was influenced by the teaching of Chinese writing. At word level, English is taught by means of the whole-word method. Children learn to read and spell by pairing the visual representation of the word as a whole with its meaning. The phonological code is

presented as a one-to-one match with the visual code. Children are often presented with written words and are then taught to pronounce them. Phonics is not included in the school curriculum. There is no explicit instruction on the intra-word phonological components. Figures 5.7 to 5.9 include sample units in the textbooks used in Hong Kong and those used in China respectively. Both textbooks show a similar approach used, which focus on communicative functions, with words and phrases presented a units for reading aloud.

Figure 5.7 Sample units: New Welcome to English Book 1A (2nd Ed.)
(Dallas & Pelham 2000a)



The sample unit shown in Fig. 5.7 is taken from a Hong Kong textbook. It is the first

unit of the first book of the primary textbook series. The four pages represent a unit which is expected to be covered in one week. The teaching focus is placed on the dialogues for greetings. The pages are taken from a teacher's copy of the book, which includes teacher's notes as shown by the small print. As suggested by the teaching notes, teachers will normally role-play the dialogues in class and there will also be a dictation to check on the spelling of the key words. There is also a reading and writing workbook with exercises corresponding to the units in the textbook. Figure 5.8 shows the two pages of comprehension exercise related to the first unit. As shown, the focus of the exercises is put on reading comprehension. There is no attention given to the development of phonological skills at word level. Apart from the textbook and the workbook, there are no other reading materials used in class.

Figure 5.8 Sample units: New Welcome to English – Reading & Writing Skills Bk 1A (Dallas & Pelham 2000b)

The teaching approach in China is very similar to that in Hong Kong. Figure 5.9 shows a unit taken from a textbook which is the third book of the Oxford English series published in China. The teaching focus is also put on expressions and vocabulary. Teaching is mainly based on the textbook and vocabulary items are often presented visually and holistically for memorisation. There are two short items on the identification of letters, but the focus is put on the visual identification rather than the phonological representation of the letters. Apart from the textbook, there is also no other reading

materials used in class.

Figure 5.9 Sample unit: Oxford English (Shanghai Edition) Book 2

(McArthur 1999)

5.8 Summary

"Practice with a given writing system develops distinct sorts of skills" (Haynes & Carr 1990). There has been strong indication from L1 and L2 reading research that

different orthographies involve different types of word recognition strategies (Frost, Katz & Bentin 1987; Koda 1987, 1988; Haynes & Carr 1990; Perfetti & Zhang 1991; Chikamtsu 1996). "Given the varying forms of representation in each orthographic system, it can be speculated that the perception of print should differ from one orthographic system to another. Similarly, different cognitive strategies must be involved in the word recognition process for each orthographic system" (Koda 1987:130). Research on the different visual search patterns and cognitive processing strategies developed in relation to specific orthographic types were reviewed in the previous chapter. This chapter has focused on the nature of the Chinese orthography leading to the visual decoding strategies developed in the process of learning to read the language.

Chinese characters belong to a logographic script which does not have a systematic sound representation or a one-to-one relationship between sound and symbol. Therefore, pronunciation is essentially memorised for each character. Even though about 39% of Chinese characters contain a phonemic component as a sound cue (Zhou 1978), this sound component does not play the same role as alphabetic symbols do in GPC rules. In short, although Chinese characters represent sounds, they are not compositional, as are alphabetic symbols, such that the pronunciation of the characters cannot be derived from the assembly of the components in the characters. Moreover, the extremely high

incidences of homophones require heavy reliance on the visual form of the logographic script to identify the character. To match the cognitive demands of the orthography, Chinese learners are thus trained to adopt a holistic visual approach for decoding. When reading Chinese characters, the learner is not encouraged to analyse the components, but to memorise the pronunciation and match the meaning directly with the symbol.

The nature of the orthography has also influenced the teaching approach of the language. A visual approach which is generally labelled as "look and say" is traditionally adopted for teaching children to read Chinese characters. The same approach is still in use in schools in Hong Kong. A character is usually presented visually and holistically and read aloud by the teacher. Children are encouraged to learn the writing and the pronunciation by heart. The strong emphasis on rote-learning and the direct mapping of the visual symbol with meaning are characteristics of, and perhaps a natural approach to, the learning of a logographic orthography. Since Chinese is the first language of children in Hong Kong, the experience in learning to read Chinese is thus their first literacy experience. The cognitive process of coping with the Chinese orthography has shaped their strategies for language learning, not only for Chinese but also for other languages due to the transfer of skills. As most of the local English teachers are Chinese, the orthographic influence is not only found among learners but also teachers. The traditional

"look and say" approach is also adopted to the teaching and learning of English as a second language. There is no explicit instruction on analytic skills for intra-word phonological components in the English language. Learners are also encouraged to memorise the spelling and the pronunciation word by word. Examination of English textbooks indicates phonological skills did not receive much attention in the teaching and learning process. Interestingly, the visual approach has great influence on second language teaching and learning among the Chinese population, both in Hong Kong, but also in China. As shown in the samples, the approaches used in the textbooks in Hong Kong and China are very similar.

However, one major difference between the Chinese learners of English in Hong Kong and in other cities in China is not their L2 learning experience but their L1 literacy development processes. Before the 50's, all Chinese population learnt the Chinese characters by rote learning. But the Pinyin Romanisation system was introduced in China as the government's effort to establish Putonghua as the official language and to promote literacy in the country. Pinyin is taught in all schools as a tool to help children identify the Chinese characters. As Pinyin is based on the Roman alphabet and requires phonological skills for assembling the phonological code, the alphabetic experience of learning and using Pinyin develops the phonological skills which are expected to be

transferred to the learning other alphabetic languages, such as English. Their alphabetic experience is thus expected to facilitate the Chinese learners' development in learning to read English. Learners in Hong Kong, on the other hand, do not learn Pinyin in school, and are therefore not expected to gain any alphabetic experience in the development of L1 literacy.

If the benefits of the Pinyin experience that the Mainland Chinese have on their L2 reading development are confirmed, the results will add evidence to the causal link between phonological skills and reading development in L2 context. There will also be implications for helping the Hong Kong Chinese to remedy their intrinsic difficulties in decoding English words. By giving them explicit instructions on phonological skills, their decoding skills should be improved, and which will in turn bring about improvement in their reading development. The three studies designed to test these hypotheses will be discussed in the next chapter.

6. Research rationales and design

6.1 Rationale 1: L1 influence on L2 reading

Comparison studies and correlational studies in L1 reading (e.g. Vellutino & Scanlon 1987; Shankweiler et al.1996) have found that phonological awareness is an essential skill for learning to read in English. Phonological awareness is highly predictive of children's reading achievement. Normal and poor readers were found to be mainly different in phonological awareness, while poor readers being poorer in phonological awareness. Training studies and longitudinal studies (e.g. Bradley & Bryant 1983; Lundberg, Olofsson, & Wall 1980; Perfetti, Beck, Bell & Hughes 1987) further indicated the causal relationship between phonological awareness and reading success. Training studies also showed that training in phonological awareness would lead to improvement in reading ability. The training studies not only confirmed the causal relationship, but also demonstrated the effects of training in phonological awareness as preventive measures of delayed literacy development due to poor phonological skills when introduced in kindergarten and also as intervention programmes for poor readers in the early literacy development stage.

The training effects were not only confined to the context of learning to read English as a first language, but also found in other environments using an alphabetic language as L1, such as Turkish, Dutch and Danish (Durgunoglu and Oney 1999; de

Jong and van der Leij 1999, 2002; Lundberg 1994; Lundberg, Frost & Petersen 1988). Children in these language backgrounds were found to have benefited from training in phonological skills on their reading development. Results from different research seem to come to a similar conclusion that phonological awareness is a necessary skill for learning to read an alphabetic language, despite the fact that there are also other factors affecting the process and phonological awareness alone is not sufficient for the development of reading skills.

On the other hand, Seidenberg (1985) argues from a naming latency study that high frequency words are encoded visually, without reference to spoken word forms, while lower frequency items require more speech-based processing. However, this argument may only be applicable to experienced readers as the frequency of items depends on the reader's reading experience. For beginning readers with limited reading experience, most of the items are low frequency items, and thus require phonological processing. The situation is similar for L2 readers who learn to read in a new writing system. To them, all items are low in frequency to start with – they are all completely new to the L2 readers. Thus all items might at first benefit from recoding to a phonological code.

As discussed in Chapter 4, the importance of phonological skills in learning to read an alphabetic language can be explained by the "Orthographic Depth

Hypothesis" advanced by Frost, Katz & Bentin (1987) which predicts that the more shallow orthographies are, the more phonological coding is involved. The significance of the "orthographic depth hypothesis" (ODH) is its implication on the specific processing strategies needed for different types of orthography. In the case of the Chinese orthography, word recognition relies heavily on the visual code.

Cross-linguistic comparison studies of L1 and L2 reading (Akamatsu 1998; Chikamatsu 1996; Haynes & Carr 1990; Holm & Dodd 1996; Huang & Hanley 1994; Jackson et al.1999; Koda, 1987, 1988, 1997; Read et al. 1986; Rickard-Liow & Poon 1998) revealed that L2 readers from logographic backgrounds have in general developed a holistic visual approach for reading. Such an approach is used in reading Chinese because it matches the cognitive demands of the logographic nature of the language and is therefore an efficient strategy for decoding. The cross-linguistic studies reported in Chapter 4 also suggest that L2 readers tend to transfer word recognition skills they developed in L1 to read L2. Haynes and Carr (1990) explain that "readers practiced in one writing system might experience, when attempting to master a new system, positive transfer or negative interference from lower level L1 reading skills, depending on the similarities and differences between the skills fostered by each of the two systems" (p.379). The fact that the visual code is more useful and important than the phonological code in their L1 experience has influenced

the Chinese L1 readers to try to apply the same strategy for L2 word recognition. The influence is not only found in the learning but also in the teaching approach. Words in English are taken as the basic units of representation, as they are in Chinese, and are therefore not prone to further analysis beyond the word level. As a result, Chinese students, when reading English, are not accustomed to analyzing symbols that stand for words into components such as letters, and in turn less accustomed to relating sequences of letters to their corresponding sounds. (Details of how English is taught in Hong Kong and in mainland China are discussed in Chapter 5.)

The processing differences between English and Chinese may constitute a potentially serious roadblock for Chinese learners of English. Treiman and Baron's (1983) findings on the consequences of treating English words in a holistic visual manner suggest that similar-looking words might be more easily confused with one another. "There are only 26 letters, words are bound to look similar in the combinations of the letters" (p. 385). Without phonological decoding, words like 'was' and 'saw', 'at and art', 'month' and 'mouth', will look confusing. The learners might find learning of new words difficult, and as their reading vocabulary expands, they might find new vocabulary items becoming increasingly confusable with those already learned. Ehri and Wilce's study (1985) compared early readers who adopt a holistic visual strategy with those who relate individual letters to sounds. Their results

indicate that the latter group can generalise decoding new words or pseudowords, while the visual group tends to recognise only those stimuli with which they are already familiar. The visual group are expected to have difficulties learning new words.

The same difficulties are faced by Chinese ESL learners who used to decode with visual strategies (Haynes & Carr 1990; Holm & Dodd 1996; Huang & Hanley 1994; Jackson et al.1999; Read et al. 1986; Rickard-Liow & Poon 1998). Their non-alphabetic L1 literacy experience together with the whole word approach used in L2 reading instruction are expected to be significant factors leading to their deficiency in phonological skills. As a result, Chinese ESL learners participating in the cross-linguistic research are found to have problems in reading speed, reading accuracy, naming new words and spelling unfamiliar words. Their decoding problems which can be attributed to their deficiency in phonological skills seem to be similar to those identified among L1 poor readers. In this sense, the experience and studies in helping L1 poor readers improve their decoding skills may also be useful for the Chinese ESL learners. But before we can apply the same treatment for helping L2 learners, we need to find out whether phonological skills play the same role in reading development in L2 contexts as in the L1 context. In L2 research, especially among Chinese ESL learners, it is still not clear about the relationship between phonological

skills and reading achievement. The first question that needs to be answered is: "*To what extent is the relationship between phonological skills and reading development found in L1 reading research valid in the L2 context of Chinese ESL learners?*"

To identify such a relationship, it will be useful to adapt the L1 research paradigm of comparing normal and poor readers in order to identify the key variables that can explain their differences in reading development. In the English L1 context, children with weak phonological skills are predicted to have difficulties in reading development. This relationship between phonological skills and reading achievement is found so far in monolingual context with comparisons made between groups of native speakers at different reading levels of English or an alphabetic language. The same relationship is yet to be identified in an L2 context. And correspondingly, the effect of phonological training on L2 learners is not known.

In previous L2 reading research, comparisons have been made between different language groups mostly comparing English native speakers with other ESL learner groups, e.g. English and Hebrew, Japanese, Korean, Chinese, etc.(Geva & Seigel 2000; Haynes & Carr 1990; Holm & Dodd 1996; Huang & Hanley 1994; Jackson et al.1999; Koda 1997; Read et al. 1986; Rickard-Liow & Poon 1998). The cross-linguistic comparisons have singled out L1 linguistic background as a variable to account for the poor phonological skills of the Chinese ESL learners. However, the

link between their poor phonological skills and their reading development has yet to be confirmed. It is not clear whether their poor phonological skills had led to their slow development in L2 reading, just as the results found in L1 reading research, or simply because of their lack of sufficient exposure to the target language. To answer the question as to what extent the Chinese learners' reading development is affected by their phonological skills, it is necessary to make comparison between two groups with the same L1 background, similar to the comparisons made in the L1 context.

6.2 Rationale 2: improvements in phonological skills will lead to improvements in reading development

In the L1 context, longitudinal and correlational studies suggest that early intervention or training in phonological skills is necessary to ensure effective literacy development. For example, in Vellutino and Scanlon's study (1987), their data collected from comparing the reading ability-matched groups show that poor readers at higher grade (Grade six) performed at comparable levels on the same tasks as normal readers at a lower grade (Grade two). Based on this pattern of results, Vellutino and Scanlon suggest that "a child's level of ability in phonemic segmentation and phonetic decoding may set upper limits on the child's ability to learn to identify printed words" (p.357). If poor phonological skills will limit the

child's reading development, the implication is therefore that early intervention is necessary.

Another longitudinal study conducted by Juel (1988), which is reported in Chapter 3, also suggests the importance of early instruction in phonemic skills to children. According to Juel, the poor phonemic awareness appeared to contribute to a very slow start in learning spelling-sound correspondences. As a result, the poor decoders showed very slow development in their decoding skills. Juel also suggests that there is a vicious cycle between word recognition skills and reading development. The slow development of poor readers can be attributed to their poor decoding skill, and the reading achievement at early stage is a predicting factor for subsequent reading development. Therefore, Juel calls for early instruction in decoding skills. Lundberg (1994) reported a follow-up study based on an extensive phonological awareness training programme conducted in 1988 (Lundberg, Frost & Petersen 1988). From their previous training experiment, the research group selected 25 children who were identified as 'at-risk' and were selected from both the experimental group (trained) and the control group (untrained) on the basis of their extremely low pre-test performance taken before the training period. The development of their reading and spelling were monitored during the first few years in school. The performance of the untrained at-risk children was the lowest when compared to the trained at-risk

children and the other untrained children in the control group. It was also observed that the gap tended to widen over the years. On the other hand, the performance of the trained at-risk children had gradually matched the performance of the untrained control group, who represented the typical children in the school system. The results indicate that given a carefully designed programme it is possible to bring up children to a level of phonological awareness to meet the demands of coping with the alphabetic writing system and thus prevent them from having reading difficulties.

Apart from studies suggesting early intervention or training in phonological skills to support reading development, other studies tried to identify the types of training that should be included in the training programme. Byrne & Fielding-Barnsley (1991) reported a training study in phonemic awareness to preschool children. The training programme was conducted in small groups (4-6), focusing on phoneme identification in words at initial and final positions. The letter representing the phoneme was displayed and the letter-sound correspondence was also pointed out to the children. Pre-training and post-training tests were conducted with both experimental and control groups. Comparison of pre-test and post-test results showed that the performance increase in phonemic awareness measures was much greater for the experimental group. A forced-choice word recognition test was conducted after the training. Children were asked to match a printed word with its

pronunciation from among two options. The test was considered by Byrne & Fielding-Barnsley as a form of reading involving the alphabetic principle. Results show that the experimental group out-performed the control group, and thus confirm that phonemic awareness and letter-sound correspondence are necessary in combination for decoding. However, among the 45 children who passed in phonemic identity and letter knowledge tasks, 9 failed the word recognition test. The researchers reckon that phonemic awareness and letter knowledge, though necessary, may not be sufficient for the acquisition of the alphabetic principle. They suggest that knowledge of phonemic organisation can be supplemented by instruction in how to use the knowledge, for example, skill and drill instruction involves specific skills such as segmentation and blending.

Phonological awareness training used in language learning contexts other than English was also tried out. Brennan & Ireson (1997) adopted the English-translated version of the phonological awareness training programme used by the Danish researchers (Lundberg, Frost & Petersen 1988; Frost & Lonnegaard 1995) in a small-scale project with 38 kindergarteners in London. Evaluation of the project was conducted by means of a comparison between the experimental group and two control groups. The experimental group received the Danish training programme of metalinguistic games and exercises. The Danish programme represents a systematic

approach of guiding children to discover and attend to the phonological structure of language through games and activities. The programme starts with games of sounds, then followed by games of rhymes, syllables and finally, phonemes. No reading and writing was done in the experimental group. One control group received two modules of the Success in Kindergarten Reading and Writing programme (Adams, Johnson, & Conners 1980). The picture/word association module and the alphabet module in the Success in Kindergarten programme were used in this second group. The focus was the development of literacy skills. Children were introduced to the letters and their corresponding sounds, and were encouraged to sound out words and match words with pictures. Reading and writing were also daily routine activities. The other control group had the same amount of time spent on literacy related activities. For this third group, the teacher used Letterland characters as a basis for teaching children letter names and sounds. A letter/sound was introduced every week with subsequent language work such as brainstorming for words and reciting rhymes. Reading and writing were also done on a daily basis.

Results of the post-test show significant differences in the metaphonological tests with the experimental group scoring the highest, followed by the Success in Kindergarten group. The researchers explain the superior performance of the experimental group with the formal step by step approach adopted in the Danish

programme. They attribute the success of the Danish programme to the systematic introduction of the phonological structure of the English words to children. The development of phonemic awareness in other two programmes was less formal and less structured. They observed that although some children in the Success in Kindergarten group managed to learn to segment and synthesise syllables and phonemes, there were some children in same group who still lacked phonemic awareness. The researchers suggest that "a step by step progression through the levels of phonological awareness is a necessary prerequisite for acquiring phonemic awareness" (p. 259).

While the experimental group performed better than the control group in reading and writing tasks, there was no significant difference between the experimental group and the Success in Kindergarten group in those tasks. This lack of significant difference was attributed to the fact that there was no explicit linkage between the phonological games and activities in the Danish programme and the children's actual literacy experiences. In other words, there was no reading and writing activity for the experimental group whereas the Success in Kindergarten group practised reading and writing every day. The researchers believe that "if the phonological awareness training had been linked in a meaningful way to the children's experience of print,

there might have been a more dramatic effect on the development of their early word reading skills" (p.257).

Apart from training design, researchers also compared the effectiveness of explicit training with implicit instruction. The study of Chapman, Tunmer and Prochnow (2001), reported in Chapter 3, examined the relation between the development of phonological processing skills and the effectiveness of a Reading Recovery programme (RR) which used whole language instructional approach. Their results indicate that the RR programme failed to significantly improve the literacy development of children who completed the programme. The researchers attribute the failure of the RR programme to its whole language instructional approach where there is a lack of emphasis on the development of phonological processing skills. Chapman et al. thus suggest the inclusion of more intensive and explicit training in phonological processing skills in RR programmes. In this sense, early intervention programmes with explicit instruction in phonological skills are necessary for children with slow literacy development.

To summarise, the training studies reviewed above suggest three major guidelines for the design and delivery of intervention or training programmes in phonological skills. First, phonological processing skills training should be explicit and systematic. The whole word approach is found to be less effective than explicit

training for developing phonological awareness. Explicit instruction which focuses on phonological processing skills should be included in reading programmes. Second, mere knowledge of letter-sound correspondences is not sufficient for effective word recognition. A step-by-step progressive development of phonological skills is recommended. Training should include specific skills such as segmentation and blending. It is the analysis and synthesis skills that enable the reader to separate and assemble the phonological structure of a written word. Third, intervention or training should be delivered at the early stage of literacy development in order to ensure effective word recognition for reading achievement. If training is delayed, the learner will lose interest in reading due to inefficient word recognition skills. If the relationship between word recognition skills and reading development is reciprocal, there will be a vicious cycle between the lack of sufficient exposure to print and the delayed development of word recognition skills, which will then further deter the learner from reading. The experiences and results gathered in training research in L1 context provide good references for developing training studies for L2 learners.

As discussed above, the reading problems faced by Chinese ESL learners are, to some extent, similar to those identified among the L1 poor readers. The effects of the training studies for L1 children may provide some reference for finding ways to help the Chinese ESL learners to rectify their L2 reading difficulties. The implication is

that phonological skills should be taught explicitly and systematically in L2 reading programmes. Some researchers (Koda 1997; Paran 1996; Segalowitz, Poulsen, & Komoda 1991) recommend direct instruction in word recognition skills for L2 learners in order to improve their L2 reading performance. However, there is still a lack of training studies to confirm the effect of phonological processing skills training for Chinese ESL learners. Segalowitz et al. (1991) outlined three important guidelines for the development of procedures to train automatic word recognition skills. First, they suggest focusing on the appropriate subcomponents needed for training. The choice needs to be related to the specific needs of the language group. Second, the practice, which is expected to be repetitive in nature, should be designed in a consistent manner so that materials are processed in the same way each time. And lastly, the tasks should resemble real world reading situations so that training can be generalized. However, apart from procedural guidelines, no training materials or techniques are offered. The researchers expressed their limitations that "in as much as we have just begun to investigate training procedures for the development of automatic word recognition, we are presently unable to identify specific materials and training techniques that would be successful in the classroom" (p.20).

Unlike L1 reading research, the lack of phonological skills training studies in the L2 context has left the Chinese learners' decoding problems unresolved. Reading in

L2 is much more complicated than reading in L1. As discussed in Chapter 4, L2 reading is fundamentally different from L1 reading as it involves more than one language. When starting to learn a second language, the readers generally have acquired a first language. The reader's L2 reading development may therefore be facilitated or hindered by his or her L1 reading experience, depending on the similarities or differences between the L1 and the L2. Due to the complicating factors like L1 influence, age, the language environment and the language learning experiences, the effects of phonological skills training found in L1 reading research may not be equally significant in the L2 context. But due to the lack of training studies in Chinese L2 learners, the effects are yet to be confirmed.

6.3 Research questions

The literature reviewed has been summarized as two research rationales for the studies reported in this thesis. First, L2 learners coming from a logographic L1 background are found to be weak in phonological skills due to the lack of alphabetic experience in the process of their L1 literacy development. Thus, their L2 reading development may be hindered. While a strong relationship between phonological skills and reading development is found in English L1 contexts, the same relationship is yet to be confirmed in English L2 contexts.

The second research rationale is drawn from results of training studies in the L1 context. It was found that phonological skills training programmes for L1 children led to improvements in reading development. But the effects of phonological skills training in the context of Chinese L2 learners are not yet identified as no such studies had been conducted so far.

Three research questions are thus derived from the research rationales discussed above:

i. *To what extent is the relationship between phonological skills and reading development found in L1 reading research valid in the L2 context of Chinese ESL learners?*

Given the complexity of L2 contexts, such as the orthographic nature of the first language in relation to that of English, the influence from L1 literacy development, as well as the quality and quantity of L2 input and exposure in the language environment, cross-linguistic generalizations should be made with great caution. Research on L2 literacy has to be language specific. If the Chinese learners' L2 reading difficulties are attributed to the interference of their L1, it is not clear whether such interference can be overturned. The first research question relates to a focus of study on Chinese ESL learners, asking about the role of phonological skills in the reading development of

these learners. The question also relates to the possible solution for easing the reading difficulties faced by the Chinese ESL learners.

ii. What is the effect of phonological skills training on the L2 reading performance of Chinese ESL learners in Hong Kong?

In L1 training studies, phonological skills are shown to be highly predictive of reading and spelling achievement. As found in the studies reviewed above, explicit and systematic training in phonological skills can bring children with poor decoding skills up to the level that matches with normal readers. Their improvement in phonological skills is also found to lead to improvement in reading performance. However, this positive training effect is yet to be confirmed for L2 readers. Training experiments in phonological skills in the L2 context for readers should be set up. The question relates specifically to the L2 learners in Hong Kong, asking about the effects of phonological skills training on their reading performance.

iii. What is the desirable level for phonological skills training for Chinese ESL learners in Hong Kong?

Most training studies, as reviewed above, were conducted with very young children, either kindergarteners, or students in first grade. Troia (1999) also reported in his critical review on phonological awareness intervention research that the researchers in all 7 of the most reliable studies examined the effect of training for

children between the ages of 4 and 7, when literacy skills rapidly progress. Therefore, he commented that "we have no credible data regarding the effectiveness of metaphonological training for older students" (p.49). The rationale for early intervention or early training, as to avoid reading difficulties caused by phonological deficiency and delayed treatment, is well accepted. But it is not clear whether the same type of training programmes will also produce similar positive effects on older children or children at a later stage of reading development. This group of learners is particularly typical in L2 contexts as most of L2 learners start learning a second language after they have developed their L1 literacy and therefore belong to an older age group. Moreover, results from L2 reading research, which were mostly conducted with adult L2 learners (Koda 1987, 1988, 1997; Holm & Dodd, 1996; Huang & Hanley, 1994; Haynes & Carr, 1990; Rickard-Liow & Poon 1998), show that decoding deficiency is commonly found among Chinese ESL readers. There is a large population of older L2 learners whose reading progress is slow despite their long years of L2 learning. They need training or intervention programmes on phonological skills to help them rectify their problems. Research which can identify effective training for older age group will particularly be useful for them.

6.4 Research design

Three studies are designed to answer the three questions discussed above.

Study I

The first study attempts to address the question of whether the lack of phonological experience of the Hong Kong Chinese learners has hindered their development of learning to read English as a second language. A comparison study is conducted between two groups of Chinese ESL learners, one from Hong Kong and the other from mainland China. Comparison of groups from the same orthographic background will allow control for cross-language variables which may attribute to the differences in reading performance. The two groups in this study shared the same L1 but had different experiences in the process of learning to read the Chinese orthography. The group from China learned to read Chinese by means of Pinyin which is an alphabetic transcription system and gives the group alphabetic experience prior to their L2 learning, whereas the group from Hong Kong did not learn the Pinyin transcription system and were taught to read Chinese by the traditional "look and say" method. They did not have any alphabetic experience in L1 literacy development. By comparing the two groups on their phonological skills, decoding skills and reading proficiency, the effect of alphabetic experience on learning to read English as a second language can be identified, and thus answer the first question as whether the

lack of such experience has hindered the Hong Kong group's L2 reading development, or conversely, the provision of alphabetic experience will rectify the otherwise intrinsic decoding deficiency of Chinese ESL learners.

Study II

The second study is a phonological skills training experiment developed from the comparison study between the L2 learners in Hong Kong and in Guangzhou. If the Hong Kong students' reading development has been hindered by their lack of phonological skills training, then an intervention programme focusing on such skills is expected to improve their reading development. The results will thus answer the second research question related to the effect of phonological skills training on the L2 reading development of L2 learners in Hong Kong. Based on Study I, the training study was conducted at the level of Secondary One in Hong Kong. The study adopts a pre-test-training-posttest control group design, in which the experimental group receives regular training in phonological skills while the control group receives no such training. As discussed above, most training studies were conducted among young learners and very little information is available on the training effectiveness in older age groups. Yet, there is a large population of older L2 learners in Hong Kong who are struggling with poor recognition skills. As they are older and have longer L1 experience which may also mean stronger L1 influence on L2 reading, it is not known

whether or not phonological skills training will be effective for improving their reading skills. This study will also address the third question as to whether phonological skills training will be effective at different levels, or there is a more desirable level than the others for such training in order to obtain the maximum effectiveness.

Study III

The third study is an extension of the second study which further explores the training effect on another age group. This training experiment was conducted at Primary One level. It adopts the same research design as the second study with the same aim as to identify the effectiveness of phonological skills training on young ESL learners' reading development in Hong Kong. Results from this study will contribute further information to L2 reading research with particular focus on young learners from Hong Kong, and will answer the second and the third research questions. As this training experiment is conducted in classroom context, results from this study will also shed light on classroom training and the design of the English curriculum in Hong Kong.

The three studies are designed to answer the three research questions. Results taken together, will contribute important knowledge to L2 reading research, particularly to helping Chinese learners of English improve their decoding and

reading performance. Details of each study are reported separately in the following chapters.

When designing the training studies for L2 readers, some of the methodological issues found in L1 training studies need to be considered. In his critical review of phonological awareness intervention research, Troia (1999) found five serious methodological shortcomings among the 39 studies he evaluated. According to Troia, the methodological flaws represent the major principles for the design and implementation of intervention experiments. The five principles are:

a. *random assignment of participants to treatment groups* – participants should be assigned randomly to treatment and control groups without any confounding factors of pre-test scores or class and school differences.

b. *control for Hawthorne effects* – alternate interventions should be provided to control groups. The lack of alternate intervention will weaken the interpretation of the treatment results because improved performance following treatment may have simply been due to the novelty of the experimental intervention rather than specific training features. The provision of alternate intervention also requested counterbalance between the instructors and treatments to avoid instructor-by-condition confounding. Besides, the balance of instructional time across conditions is other an issue of concern. If the treatment group received a

longer period of training, then the positive effect of treatment may just be an artefact of extended interaction with an instructor.

c. *assurance of treatment fidelity* – manipulation checks should be conducted to ensure that treatment conditions are implemented faithfully. Assurance measures may include observation of intervention sessions, audiotaped sessions, teacher training for instructors, regular scheduled meetings, lesson plans as well as complete written records after each treatment.

d. *measurement sensitivity* – there should be an absence of ceiling and floor effects in the dependent measures. If the criterion tasks are too easy or too difficult, the range of observed variance between experimental and control groups will be restricted.

e. *inadequately described samples* – the demographic characteristics of the participants should be adequately described, including the gender, the mean age, the grade level, the socioeconomic status of the sample, and the geographic locale of the study, in order to allow for replication of the study and generalisation of findings to other similar populations.

Troia (1999) also reported that none of the seven highest ranked studies of phonological awareness training in his review evaluated the effects of classroom-based intervention. They are not representative of typical classroom

instruction as the training sessions were conducted by specially trained teachers or research personnel outside of the classroom with small groups of students or individual children from narrowly defined populations. There is little evidence that the phonological awareness treatment programmes are ecologically valid and effective in classroom environments. Troia commented that "it is possible that such programs may be impractical or too complex for implementation in the classroom and that the positive effects observed by researchers would be compromised in classroom practice" (p.49).

The difficulties of classroom-based intervention research are mainly found in the control for internal validity, for example, random assignment of participants into respective condition groups, counterbalance between intervention treatment and alternate treatment, control measures for treatment fidelity, etc. In Troia's review, those studies that met a higher proportion of the internal validity standards concurrently met a lower proportion of the external validity criteria. Similar patterns were reported in the methodological analysis of studies of learning strategy instruction conducted by Ridgeway, Dunston, & Qian (1993). They found a statistically significant inverse relationship (r=-.45) between internal validity and ecological validity. In other words, the higher the validity in terms of research design, the lower the generalisabiliy of research methods and results to other environments such as

classroom environment will be found in the same study. The balance between research design and the practicality and generalisation of research results for education purposes should be carefully considered.

Nevertheless, classroom research is most needed to inform and improve educational practice. If phonological deficiency is commonly found among Chinese ESL learners, then phonological skills training programmes, if proved effective, should be incorporated into the L2 reading curriculum. Therefore classroom research which prepares the treatment to be suitable for classroom instruction will be useful and is mostly needed for the L2 context. The two training studies (Study II and III) are conducted in classroom situations, hoping that results can be generalised in other English classes in Hong Kong. The major principles for the design of training studies are taken into account and every effort is made to maintain the internal validity of the studies.

7. Study I: Exploring the relationship between phonological skills and reading development in the context of Chinese ESL learners

7.1 Objectives

This study aims to answer the first question listed in Chapter 6 as "*To what extent is the relationship between phonological skill and reading achievement found in L1 reading research valid to the L2 context of Chinese ESL learners*". If the same relationship is confirmed, then the treatment for poor readers in L1 context can be tried out for the Chinese L2 learners. This will set the direction for remedial or intervention treatment for improving the reading ability of Chinese ESL learners.

As discussed in the previous sections, phonological skill was found necessary for reading development in the context of English as L1. It is not clear whether the same relationship exists in the context of learning to read English as L2, particularly in the context of Chinese ESL learners, who are found to be weak in phonological skill due to influence from their L1 literacy experience (Akamatsu 1998; Chikamatsu 1996; Haynes & Carr 1990; Huang & Hanley 1994; Jackson et al.1999; Koda, 1987, 1988, 1997; Rickard-Liow & Poon 1998; Holm & Dodd 1996; Read et al. 1986). Based on L1 reading research reviewed in the previous chapters, it is speculated that their poor phonological skills may hinder the Chinese learners' development of learning to read English as a second language. Cross linguistic comparisons

conducted in previous L2 reading research cannot provide answer for this question because when learner groups from different linguistic background are compared, the results are compounded by issues related to linguistic background. Their L2 reading development could be largely influenced by their L1. As cross-linguistic comparisons involve more than one language group and due to different orthographic types, there will be different L1 influence in different language groups.

To avoid confounding variables related to cross-linguistic backgrounds, this study compares two groups of Chinese ESL learners, one from Hong Kong and the other from Guangzhou, China. The two groups share the same L1 background, that is, they speak the same mother tongue and read the same orthography as their first language. Not only had their L1 background controlled for, the two groups were also matched on their reading ability. The two groups, however, had different pace of L2 reading development. The Hong Kong group started learning to read English at an earlier age and spent much more time on it. The Guangzhou group, on the other hand, started learning English at a later stage but developed at a faster rate; their reading level was matched with that of the Hong Kong group. By comparing the two groups' phonological skills, it is hoped to identify the relationship between phonological skills and reading development in the L2 context of Chinese ESL learners. Four hypotheses can be made about the comparison.

Hypothesis 1:

It is hypothesised that the Guangzhou group have better phonological skills than the Hong Kong group. As discussed in L1 reading research (refer to Chapters 2 and 3), direct instruction is more effective than language exposure in developing phonological skills. The Guangzhou group had received direct instruction in Pinyin when learning to read Chinese characters, and therefore, they are expected to have developed better phonological skills than the Hong Kong group.

Hypothesis 2:

With better phonological skills, the Guangzhou group are expected to rely more on phonological skills for decoding than the Hong Kong group when reading English words.

Hypothesis 3:

Following Hypothesis 2, if the Guangzhou group relies more on phonological skills for decoding English, their reading ability is expected to be more closely related to phonological skills. It is therefore hypothesised that the relationship between phonological skills and reading comprehension found among the Guangzhou group is stronger than that found among the Hong Kong group.

Hypothesis 4:

As for spelling, which requires students to recode single words from the

phonological to the visual code, it is hypothesised that the Guangzhou group also relies more on phonological skills than the Hong Kong group for spelling.

7.2 Method

7.2.1 Participants

Two groups of Chinese ESL learners (Total N=159) participated in this comparison study. One group was brought up in Guangzhou, South China, and the other group came from Hong Kong. Both groups came from the southern part of China and they speak the same dialect (Cantonese) as their mother tongue. As there is only one written language in China, they all read the same orthography as their first language.

There were three possible ways to identify two suitable groups for comparison. One is to match their age. The second is to match the length of their English learning experience. The third is to match their L2 reading ability. In the pilot study, a L2 reading test was given to a group of Secondary One (S.1) students in Hong Kong, and 2 groups of students in Guangzhou, S.1 and S.2 respectively. It was found that the two S.1 groups were matched on age, but the L2 reading ability of the Guangzhou group was lower than the Hong Kong group mainly due to the fact that students in Guangzhou start learning English at a much older age. Since the groups do not have

the same starting point, an age-matched design will not appropriately account for any difference in developmental stages. In this case, the higher level of reading achievement of the Hong Kong group at S.1 can possibly be explained by their longer learning experience and exposure. Hence, the research questions on the effect of phonological skills on reading achievement cannot be answered by an age-matched design.

If the two groups were to match on the length of English learning experience, the Guangzhou group will have to be in senior secondary levels as there is a big difference in the amount of time each group spent on English lessons per week, then there will be a large age gap between the two groups. The large age gap will give rise to complicated background variables such as cognitive and academic development and other types of exposure. After checking results of the pilot test, it was found that S.2 in Guangzhou had similar reading ability as S.1 in Hong Kong. If the two groups were matched on the level of L2 reading ability, then their differences in phonological skills could be explained by the different pace of L2 reading development. The design is similar to the reading ability match comparison studies discussed in Bryant (1986). It was therefore decided that a Guangzhou group at S.2 level would be used in this comparison study.

The Guangzhou students

The group came from a secondary school in Guangzhou, China (N=79, Age = 14.87). The students were studying in the second year of secondary school (S.2). The school is located in an urban residential district where students mainly came from the neighbouring area. According to the School Head, the academic standard of the school belongs to the mid-range level. Chinese (Mandarin) is the medium of instruction in the school and all subjects, except English, use Chinese textbooks. The students started learning English in the fifth year in primary school (P.5), and therefore had 3 years' English learning experience. They had 4 English lessons (one hour per lesson) per week on a regular basis in both primary and secondary schools. The English speaking environment in China is, to a large extent, confined to the classroom. Apart from English lessons in school, English is seldom used in other subjects, nor in other contexts outside classroom. Reading materials in English are scarce as foreign books are expensive and restricted for import. Language input comes mainly from the teacher and the textbook. Although the situation is improving as China has opened up in recent years, the English environment in China is still very limited. Students do not have much opportunity to be exposed to English outside the English classroom. In the English lessons, English word recognition is predominantly taught by means of the whole-word method. Children learn to read and spell by pairing the visual

representation of the word as a whole with its meaning. The phonological code of the word as a whole is presented as a one-to-one match with the visual code. There is no explicit instruction in the intra-word phonological components. Phonics is not included in the school curriculum.

Being native Chinese speakers, the Guangzhou group is expected to be influenced by the logographic nature of the Chinese writing system, which requires holistic mapping between visual configuration and meaning. But instead of learning to read the Chinese characters with the visual method, students in the Guangzhou all learned Pinyin in primary school. In the first 4-8 weeks of Primary 1 (around 6 years old), just before children begin to learn to read Chinese characters, Pinyin is taught intensively to them. The GPC rules and the phonemic skills such as segmentation and blending are taught. Details of how Pinyin is taught in primary school are described in Chapter 5, Section 5.5.

The group from Guangzhou had received intensive direct instruction in Pinyin in P.1 and since then had been encouraged to apply such skills to read Chinese characters, especially unfamiliar characters. As Pinyin is based on the Roman alphabet, the alphabetic literacy experience gained in the use of Pinyin in the L1 learning process is expected to facilitate the development of phonological skills. It is believed that the phonological skills developed in this L1 learning process can be transferred to the

learning of English (L2), which is also alphabetic, and thus facilitate their L2 reading progress.

The Hong Kong students

The group came from a secondary school in Hong Kong (N=80, Age = 12.63). The students were studying in the first year of secondary school (S.1). The school is located in a residential district and most students lived in the neighbouring public housing estate and came from working class families. The academic standard of the school belongs to the mid-range level. It uses Chinese as the medium of instruction for all school subjects except English. However, the school uses a mix of English and Chinese textbooks. Students have 8 English lessons (40 minutes per lesson) per week on a regular basis. They started learning English in the first year in primary school (P.1), and had 6 years' English learning experience.

In Hong Kong, most of the population came from the southern part of China. They speak Cantonese as their mother tongue. Under the British regime, the people in Hong Kong were not encouraged to follow the language policy in mainland China. Mandarin was seldom used in Hong Kong before 1997. After the return of the sovereignty to China, Mandarin, as a tool to communicate with the mainland, has become more important in Hong Kong. But it is still not a compulsory subject in schools. Children are taught to read in Cantonese (with the Cantonese pronunciation).

As Pinyin is based on Mandarin pronunciation, it is therefore not applicable to Cantonese, and is not taught in schools. On the other hand, there is no standardised or official alphabetic transliteration system based on Cantonese. Therefore, children in Hong Kong are not taught to read Chinese with the aid of any alphabetic representation of the characters. Both the visual code and the Cantonese phonological code of a Chinese character are presented holistically. Children are told to memorise the phonological code and the visual code by rote learning. See Chapter 5, Section 5.6 for how Chinese is taught in Hong Kong.

As discussed in Chapters 4 and 5, due to the logographic nature of the Chinese writing system, the corresponding processing strategies developed for word recognition are largely visual and holistic. In general circumstances, Chinese native speakers do not have the training in phonological skills in their L1 literacy experience. Children in Hong Kong are therefore expected to be weak in phonological skills. Moreover, the processing strategies developed in the non-alphabetic L1 literacy experience may also be transferred to their learning of English (L2) and thus may handicap their L2 reading development.

Although children in Hong Kong did not learn Pinyin, which is expected to be a facilitating tool for developing phonological skills, they have a much richer environment for learning English than the Mainland Chinese. Hong Kong was a

British colony for 150 years. English is an official language and all government documents are bilingual. English is commonly used in the business community as well as in society at large. English reading materials, both for leisure or for study, are easily accessible. English is a compulsory subject since primary school. In fact children start learning English in kindergarten, although there is no formal curriculum at such level. English is formally taught in primary school Grade 1 (P.1) as a major subject. Each week, there are about 4 to 5 hours of English lessons on the time-table. The number of hours for English lessons in secondary school increases to about 5 to 6 hours per week. Although Chinese (Cantonese) is the medium of instruction in school, students are still required to read English references and supplementary materials. There are many opportunities for students in Hong Kong to use English both receptively and productively inside and outside classroom.

With the influence of Chinese teaching and learning, English is taught with the whole word approach in both Hong Kong and Guangzhou. While students in Guangzhou are expected to develop phonological skills in the Pinyin experience, students in Hong Kong are expected to develop phonological skills through exposure to the English language. Table 7.1 summarises the demographic information of the two groups.

Table 7.1: Demographic Information

Group	N	Age (mean)	Level	No. of hours of English per week	Cumulated no. of class hours* of learning English	Competence in Pinyin
Hong Kong	80	12.63	S.1	5.3	1200	No
Guangzhou	79	14.87	S.2	4	480	Yes

** estimate based on no. of hours per week X 40 weeks per academic calendar X no. of years*

As shown in Table 7.1, the two groups differ mainly in the length of their L2 learning experience and their competence in Pinyin. Students from Guangzhou had learned Pinyin in the process of learning to read Chinese. The Hong Kong students started learning English at a very young age (P.1, age 5-6) and therefore had much longer learning experience and exposure to the language as compared to the Guangzhou students.

7.2.2 Test instrument (Please refer to Appendix 1)

The two groups were tested in their schools. The tests were administered at the beginning of an academic year. Students were group tested in 2 sessions held on 2 consecutive days. The first session was held in a classroom while the second session was held in a language laboratory. Students were put in groups of 40. Instructions were given in Cantonese to ensure that all students could fully understand the tasks. However, some students did not complete all the tasks, as they were either absent in one of the test days or had left the classroom for some reasons during the test sessions.

A series of tasks, described below, were used to measure reading level,

phonological skills, decoding skills and spelling. Both groups had the tasks in the same sequence.

1. Reading comprehension

The reading section of a past paper of the Cambridge Key English Test (UCLES, 1997) was used to measure students' reading ability (Appendix 1.1). KET is an examination for students of English as a foreign language. The test was held in a classroom. There were 55 items. Students were given a test booklet and an answer sheet and were asked to put all the answers on the answer sheet. They were given 40 minutes to complete the test.

2. Phonological skills

Two tasks were used to measure phonological skills. The first task measures phonological skills at the level of rimes. The second task measures phonological skills at phonemic level.

a. Rhyme Judgement task

This task (Appendix 1.2) was adopted from Holm & Dodd (1996). It measures students' sensitivity to rhyme in spoken words. Twenty word pairs were constructed in 4 conditions, namely orthographically similar rhyming and non-rhyming pairs (e.g. rang-sang, put-but), and orthographically dissimilar rhyming and non-rhyming pairs (e.g. earn-turn, cat-kit). All word pairs consist of monosyllabic words. The different

orthographic conditions measure the students' sensitivity to rhymes and also the extent to which students rely on the visual code for identifying the rime units in spoken words. The task was administered in a language laboratory. The word pairs were read twice and recorded on a master audio tape. There were 5-second intervals between each pair. Students were told to indicate on an answer sheet whether the word pairs they heard were rhyming pairs or not. There were equal number of rhyming and non-rhyming pairs in each condition. Two examples and one trial item (with feedback) were given before the task began.

b. Phoneme Deletion task

This task (Appendix 1.3) requires students to identify and delete phonemes at specified positions. To perform the task, students need to identify the target phoneme, isolate and segment it from the rest of the word, and articulate the remaining phonemic components in the original word. There were 30 items testing phoneme identification and deletion in two specified positions, the initial and the final positions of a word. For 15 items, students had to repeat a word without the initial phoneme. For another 15 items, they had to delete the final phoneme. All items were real words. The task was divided into two separate sections, one for each of the two specified target positions. For each section, two examples (with explanations) and one trial item (with feedback) were given.

The task was administered in a language laboratory where students sat in partitioned booths with a dual cassette tape recorder in each booth. The items were recorded on a master audio-tape. Each item was read once with 5 second intervals between items. The master tape was played to the students at the teacher's control panel. There was a blank tape in the tape recorder in each booth. Students were told to repeat the given word without the phoneme in specified position. Their responses were recorded on the tape and later on assessed by the researcher. A small sample of the tapes was crossed checked by a colleague with a Masters degree in Phonology.

3. Decoding

Two tasks were used to measure decoding skills. One is a homophone judgment task which measures students' decoding ability in terms of accessing the phonological code of a word through its visual information. The other task is a word naming task which measures students' ability to use analogy and GPC rules to pronounce unfamiliar words.

a. Homophone Judgment task

This task (Appendix 1.4) includes 30 word pairs, with equal number of homophonic and non-homophonic pairs. The items were constructed in 3 conditions: regular spelling, irregular spelling and pseudowords (orthographically legal letter strings). All items were monosyllabic words. The design of this task was based on

Kay, Lesser & Coltheart (1992). This task was also adopted in Koda (1998). In the original design, the pseudoword pairs contained 2 pseudowords (e.g. kore – koar). Koda found in her pilot test that "contending with two nonsense letter-strings was linguistically too demanding for beginning-level ESL learners" (p.203), so she modified the pseudoword pairs to contain one real English word and one pseudoword (e.g. core – koar). Koda's modified version was used. The task was conducted in a classroom. The items were presented in written form as a list of word pairs. Students were asked to indicate (with a tick or a cross) whether the words in each pair had the same pronunciation. Six examples, two for each condition, were shown to students with explanations before the task began.

b. Word Naming

This is a read aloud task (Appendix 1.5). The task was administered in a language laboratory. Students were given a list of 39 single words and were asked to read out each of them. They were encouraged to try all the items. Their responses were recorded on an audio tape. There was no time limit for this task. The items were taken from the word list constructed by Treiman, Goswami & Bruck (1990) for measuring children's and adult's ability to pronounce words and nonwords with consonant-vowel-consonant structure. The 39 items were constructed in two conditions: real words (15 items) and pseudowords (24 items). All items were

monosyllabic words. Treiman et al. developed two types of pseudoword. One type has a vowel-consonant (VC) unit which corresponds to the rime of a high frequency word, (e.g. fook) while the other type has the VC unit found in low frequency words (e.g. chud). There were 12 items of each type of pseudowords. No example was given, but detailed instructions were announced at the beginning of the task.

4. Spelling

A lexical spelling task was adapted from Rickard-Liow & Poon (1998). The 30 items (Appendix 1.6) were constructed in 3 conditions, namely regular spelling (e.g. 'park'), irregular spelling (e.g. 'watch' [as compared to 'at' and 'match']) and orthographically legal non-words or pseudowords (e.g. 'tard'). All items are monosyllabic words. Spelling of the regular words requires either application of GPC rules or lexical knowledge of the words. Spelling of the pseudowords requires the application of GPC rules only, whereas the irregular spellings, which cannot be generated by GPC rules, require lexical knowledge of the correct spelling. The task was administered in a language laboratory where students sat in individually partitioned booths and were given an answer sheet. Three examples of each type of items were given before the beginning of the task. Each item was read 3 times and recorded on a master audio tape, with 10-second intervals after each item. The same master tape was used for all the subject groups. The students were instructed to write

down the spelling of the words they heard. Some slight spelling variations based on the audio input, especially the irregular words, are accepted, e.g. 'watch' vs 'wotch'.

Table 7.2 shows a summary of the tasks, task design and the corresponding skills measured.

Table 7.2: Summary of Tasks

Task type	Task	Items	Venue	Skills measured
Reading comprehension	reading section of KET	55 items	classroom	ability to understand different types of text
Phonological Skills	rhyme judgment task	20 word pairs: • 5 orthographically similar rhyming pairs • 5 orthographically similar non-rhyming pairs • 5 orthographically dissimilar rhyming pairs • 5 orthographically dissimilar non-rhyming pairs	language laboratory	sensitivity to rhyme in spoken words
	phoneme deletion task	30 items: • 15 for initial phoneme • 15 for final phoneme	language laboratory	ability to identify and manipulate specified phoneme in a spoken word
Decoding Skills Spelling	homophone judgment task	30 items: • 10 real word pairs with regular spelling • 10 real word pairs with irregular spelling • 10 pseudoword pairs	classroom	ability to access the phonological code of a word through its visual cue
	word naming task	39 items: • 15 real words • 12 High frequency pseudowords • 12 low frequency pseudowords	language laboratory	ability to recode from the visual representation of a word for its phonological representation
spelling test		30 items: • 10 regular spelling • 10 irregular spelling • 10 pseudowords	language laboratory	ability to recode from a phonological code to a graphemic representation

7.2.3 Task reliability

Reliability tests were run to estimate the internal consistency of items in each task. As there are multiple items in each task and the multiple items are summed to

obtain a total score, the coefficient alpha of each task was used. The reliability of each task is reported in Table 7.3.

Table 7.3: Task Reliabilities

Tasks	No. of items	Alpha
reading comprehension	55	.83
rhyme judgment	20	.73
phoneme deletion	30	.81
homophone judgment	30	.68
word naming	39	.87
spelling test	30	.72

The tasks have the value for coefficient alpha between .68 to .87, indicating satisfactory reliability (Green, Salkind, & Akey 2000).

7.3 Results and Discussion

7.3.1 Overall results

There was no ceiling effect or floor effect in all the tasks. The tasks were not particularly easy or difficult for both groups. Apart from reading comprehension where both groups obtained similar scores, the Guangzhou groups had higher scores than the Hong Kong groups in all the other tasks. The raw scores are listed in Table 7.4.

Table 7.4: Raw scores

Tasks (No. of items)		Group HK	Group GZ
Reading comprehension (55)	Mean	33.34	32.94
	Std Deviation	*(6.12)*	*(7.31)*
Rhyme judgement (20)	Mean	14.48	17.49
	Std Deviation	*(2.94)*	*(2.85)*
Phoneme deletion (30)	Mean	14.97	24.85
	Std Deviation	*(5.55)*	*(2.88)*
Homophone judgement (30)	Mean	14.69	19.61
	Std Deviation	*(3.59)*	*(3.76)*
Word naming (39)	Mean	10.35	24.18
	Std Deviation	*(4.58)*	*(6.16)*
Spelling (30)	Mean	11.87	11.47
	Std Deviation	*(3.32)*	*(4.08)*

As the number of items in each test is different, the raw scores in each task were converted into percentages for easy interpretation of results. There is no difference in the *t*-value and the *F*-value when *t*-tests and ANOVAs are computed with the percentage scores as compared to the computation with the raw scores. Results of the two groups were compared task by task and on the basis of the item conditions. Further analyses were conducted with reference to the four hypotheses listed above.

7.3.2 Comparison of reading ability

An Independent-samples *t*-test was conducted to assess the mean difference of the reading comprehension scores between the two groups. Results of the *t*-test are reported in Table 7.5.

Table 7.5: Group comparison of reading ability tasks

Tasks		**HK**	**GZ**	***t-value***	**Sig.**
Reading comprehension	Mean (%)	60.61	59.88	.38	.71
	Std Deviation	*(11.13)*	*(13.29)*		

As described in the research design, the two groups are expected to matched on their reading ability. Results of the *t*-test confirmed that the two groups have no significant difference in reading comprehension, $t(157) = .38$, $p = .71$. The group from Hong Kong (M = 60.61%, SD = 11.13) on average has a similar level of reading comprehension as the group from Guangzhou (M = 59.88%, SD = 13.29).

7.3.3 Comparisons of phonological skills

To compare the effect of direct instruction and language exposure on the development of phonological skills, an Independent-samples *t*-test was conducted to evaluate the mean differences of the two groups on the two phonological skills tasks, namely, rhyme judgment and phoneme deletion tasks. The first task tested their sensitivity to rhyme in spoken words, whereas the second task measured their ability to identify and segment specified phoneme in a spoken word. Results of the *t*-test are listed in Table 7.6.

Table 7.6: Group comparison of phonological skills tasks

Tasks		**HK**	**GZ**	***MD*** (HK-GZ)	***t-value***	**Sig.**
Rhyme judgment	Mean (%)	72.40	87.47	-15.07	-6.46	.001
	Std Deviation	*(14.71)*	*(14.23)*			
Phoneme deletion	Mean (%)	49.91	82.85	-32.94	-12.65	.001
	Std Deviation	*(18.51)*	*(9.62)*			

Rhyme judgment

Both groups performed well in the rhyme judgment task, the Hong Kong group and Guangzhou group scoring an average of 72.4% and 87.5% of the task respectively. The high percentages indicated that both groups had developed a good level of sensitivity to rhyme in spoken words. However, the mean score of the Guangzhou group was significantly higher than that of the Hong Kong group t (152) = -6.46, p < .001, MD = 15.07. The Hong Kong group had developed this sensitivity through their exposure to the language whereas the Guangzhou group had acquired it by means of direct instruction in Pinyin when they learned to break syllables into onset and rime segments for word recognition. Results of the two groups indicated that sensitivity to rhyme can be developed both through language exposure and direct instruction, but the higher scores obtained by the Guangzhou group confirmed that direct instruction is more effective than language exposure in this task.

The construction of the rhyme judgment task included four orthographic conditions, namely orthographically similar rhyming and non-rhyming pairs (OSR

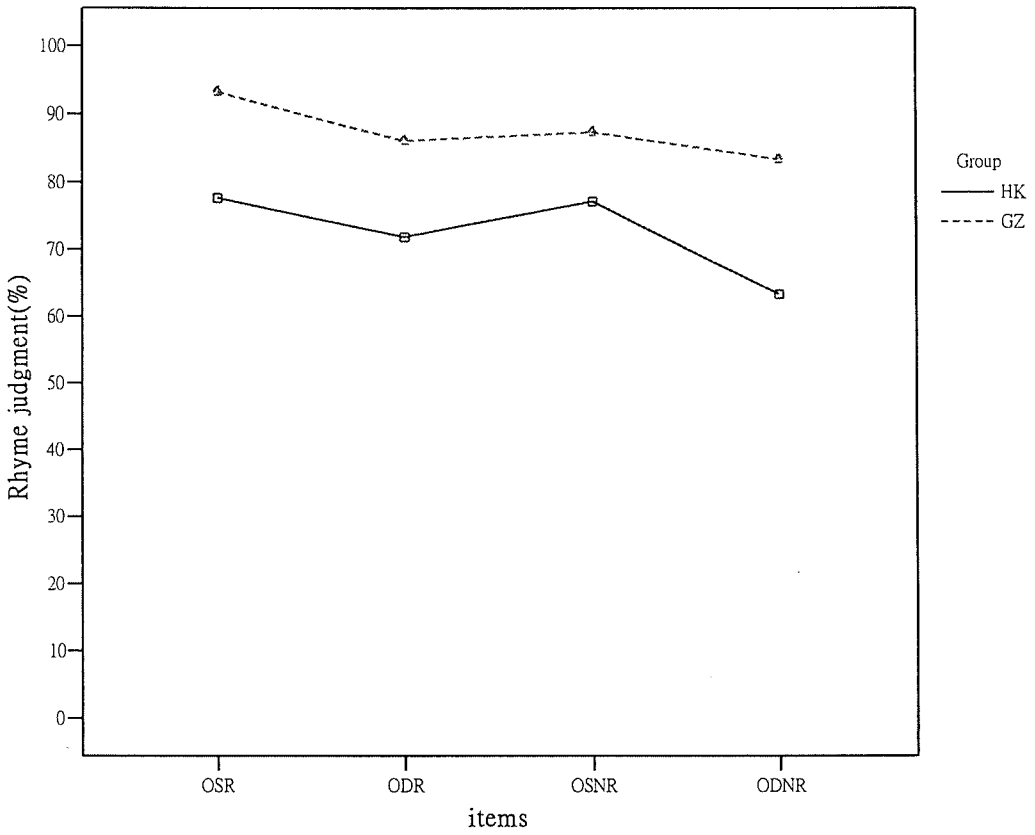
and OSNR), and orthographically dissimilar rhyming and non-rhyming pairs (ODR and ODNR), to measure the interference of the visual codes on the students' judgment of the rhyming pairs. For easy comparison, the raw scores were converted into percentages (similar treatment of raw scores can be found in Read et al. 1986; Haynes & Carr 1990). The means and standard deviations for the four types of item are listed in Table 7.7.

Table 7.7: Means and Standard Deviations for rhyme judgment items

Tasks		**HK**	**GZ**	***MD*** (HK-GZ)	***t-value***	***Sig.***
Ortho Similar Rhyming pairs (OSR)	Mean (%)	77.60	93.17	-15.57	-5.74	.00
	Std Deviation	*(21.04)*	*(11.50)*			
Ortho Dissimilar Rhyming pairs (ODR)	Mean (%)	71.73	86.08	-14.34	-4.35	.00
	Std Deviation	*(22.56)*	*(18.22)*			
Ortho Similar Non-rhyming pairs (OSNR)	Mean (%)	77.07	87.34	-10.28	-3.62	.001
	Std Deviation	*(17.92)*	*(17.30)*			
Ortho Dissimilar Non-rhyming pairs (ODNR)	Mean (%)	63.20	83.29	-20.09	-4.63	.001
	Std Deviation	*(27.52)*	*(26.30)*			

The mean scores of the Guangzhou group were higher than the Hong Kong group. The Mean Differences between the two groups were quite large. The *t*-test results confirmed the significant differences between the two groups in all the four item conditions. Their performance profiles of the two groups in the four conditions are illustrated in Fig. 7.1.

Figure 7.1: Performance profiles on rhyme judgment items



Inspection of Figure 7.1 showed similar profiles of performance between the two groups, although the mean scores of the Guangzhou group were consistently higher than the Hong Kong group on all four item types. The rhyme judgment of both groups was disturbed by the orthographic conditions of the word pairs, especially when the pairs were orthographically dissimilar. The results suggested that both groups, to different extent, relied on the visual code for identifying the rime units in spoken words. They were disturbed by the visual code even though they were only given the phonological input for making judgments. It was possible that when they listened to the word pairs, they had to look for the visual representation in mind in order to make

the judgment. When there was mismatch between the visual code and the phonological code, e.g. weight – height, and cue – new, their judgments were disturbed.

This phenomenon could be explained by the heavy emphasis on visual strategy for reading Chinese and such strategy was also applied to the teaching and learning of English, which was a general approach used in both Hong Kong and Guangzhou. A similar pattern was found in Holm & Dodd's study (1996) where they explained that their Hong Kong subjects used their knowledge of the spelling rather than any awareness of sounds when making judgment on the word pairs. The researchers concluded that their "Hong Kong subjects' use of an orthographic strategy suggests that the phonological skills were not available to them" (p. 136).

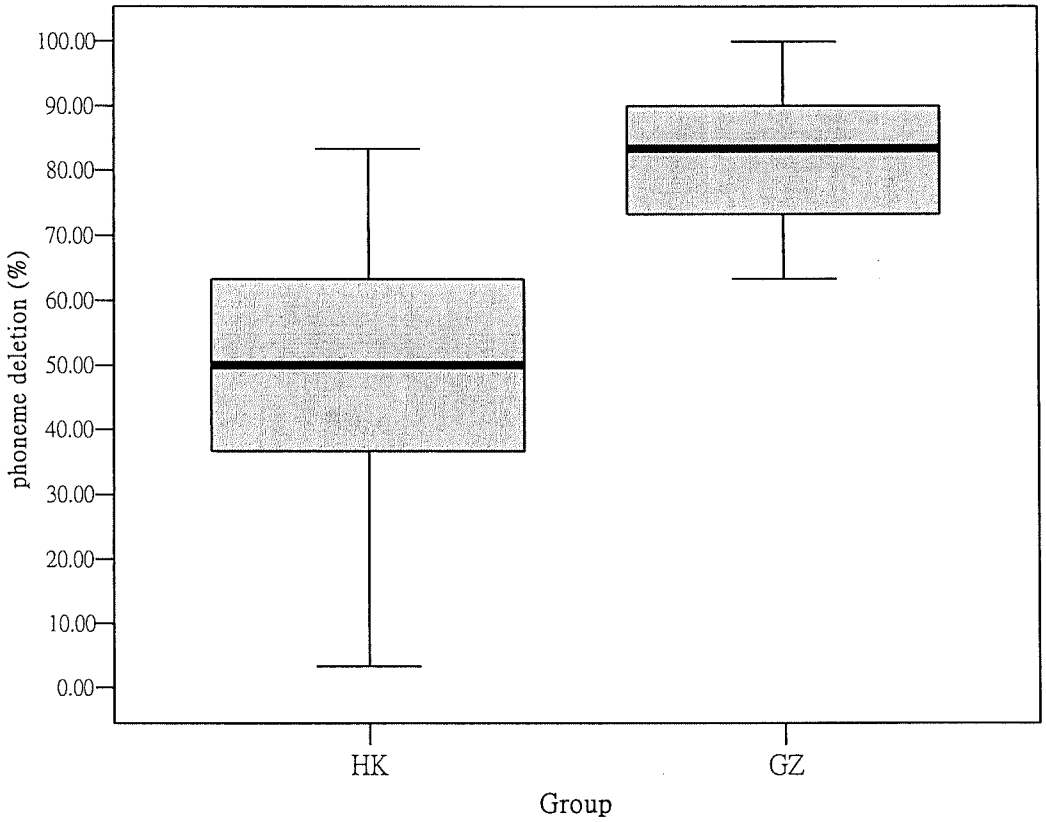
Holm & Dodd (1996) also suggested that the difficulties in rhyme judgment faced by the Hong Kong subjects could be explained by their lack of experience with subsyllabic segmentation. As they explained, the syllabic units of the Chinese language are highly compact and are directly bound to the logographs which represent morphemes as a whole, the Chinese subjects (non-Pinyin) do not have the phonological experience at phonemic level, which is essential for developing sensitivity to rhyme. The Guangzhou group, with explicit instruction in Pinyin which taught them to break syllables into onset and rime segments, was comparatively less

disturbed by the orthographic conditions, and therefore showed higher sensitivity to the phonological components of spoken words at sub-syllabic level.

Phoneme deletion

As shown in Table 7.4, there was a big gap between the two groups in the mean scores of the phoneme deletion task. The Guangzhou group scored significantly higher than the Hong Kong group, t (134) = -12.65, $p < .001$, MD = 32.94. On average, the Guangzhou group scored 82.85% while the Hong Kong group scored only 49.41% of the task. The Guangzhou group showed a much higher level of phonemic skills in terms of identifying and manipulating specified phonemes in spoken words. Apart from the mean differences, the Standard Deviation of results from the Guangzhou group was smaller than the Hong Kong group, indicating that the range of phonemic ability in the former group was smaller than the latter. Figure 7.2 illustrates the distribution of results from the two groups.

Figure 7.2: Distribution of results in Phoneme Deletion task.



7.3.4 Comparisons of word decoding skills

Two tasks were used to measure decoding skills. The first was a homophone judgment task which tested the ability to access the phonological code of a word through its visual cue. The judgment is based on the comparison of the phonological codes of two words in a pair. The second task was a word naming task which required students to recode the phonological code from the visual representation of a word. An Independent-samples *t*-test was conducted to compare the mean differences of the two groups on the two decoding tasks. Results of the *t*-test are listed in Table 7.8.

Table 7.8: Group comparison of decoding tasks

Tasks		HK	GZ	*MD* (HK-GZ)	*t-value*	Sig.
homophone judgment	Mean (%)	48.96	65.36	-16.40	-8.44	.001
	Std Deviation	*(11.97)*	*(12.53)*			
word naming	Mean (%)	26.54	61.99	-35.45	-14.99	.001
	Std Deviation	*(11.74)*	*(15.80)*			

Homophone judgment

Mean score of the Hong Kong group in the Homophone Judgment task was below 50%, which is the chance level. Since this is a forced choice task, their result indicated that the Hong Kong group was not able to make judgment on the pronunciation of the word pair items. The Guangzhou group scored significantly higher than the Hong Kong group. Result indicated that the Guangzhou group had higher ability to access the phonological code of a written word in order to make the judgment.

The items in the Homophone Judgment task were constructed in three conditions, namely, real words with regular spelling, real words with irregular spelling and pseudowords. Decoding real words with regular spelling may or may not require phonological decoding as these words could be decoded as sight words or they could be decoded as unknown words, depending on whether the words were familiar to the reader or not. Irregular words do not require phonological skills for decoding, but instead, they need to be decoded as sight words, i.e. these words need to be familiar

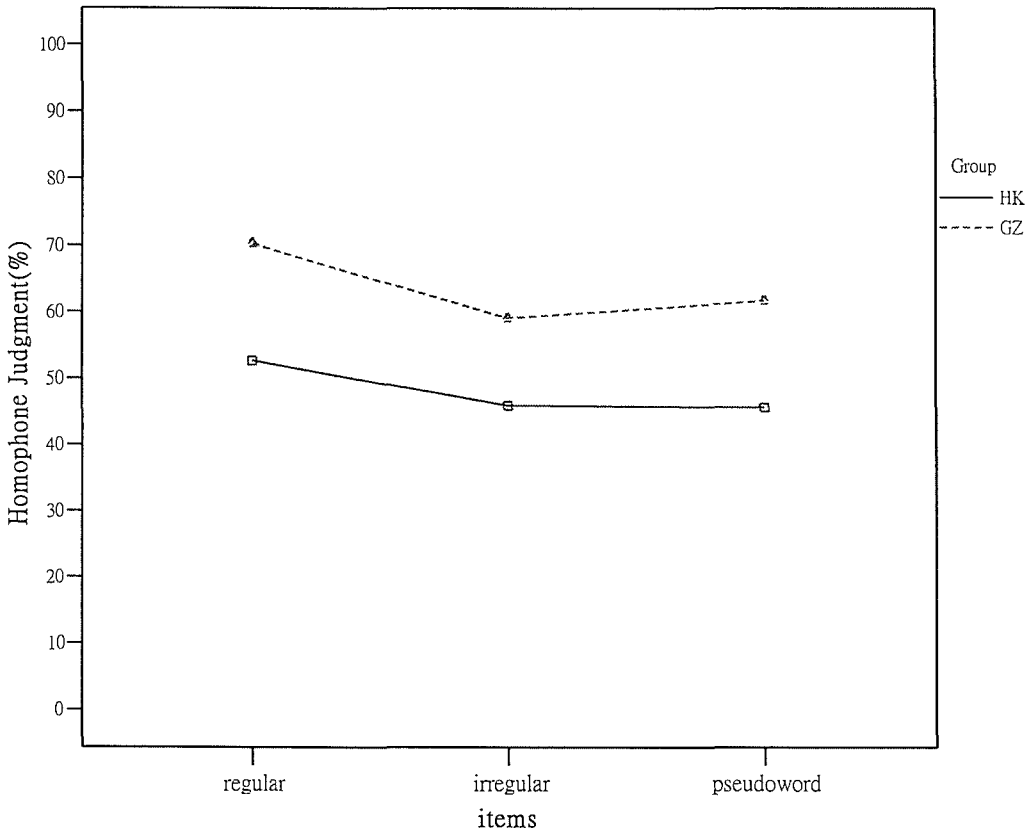
words. Pseudowords do require phonological decoding as they are unknown words and the phonological code could only be accessed by applying GPC rules. The scores in the three conditions are listed in Table 7.9.

Table 7.9: Means and Standard Deviations for homophone judgment items

Tasks		**HK**	**GZ**	***MD*** (HK-GZ)	***t-value***	**Sig.**
Regular word pairs	Mean (%)	52.63	70.25	-17.63	-6.17	.001
	Std Deviation	*(17.19)*	*(18.81)*			
Irregular word pairs	Mean (%)	45.88	58.99	-13.11	-5.63	.001
	Std Deviation	*(14.64)*	*(14.73)*			
Pseudoword pairs	Mean (%)	45.63	61.65	-16.02	-6.26	.001
	Std Deviation	*(16.68)*	*(15.56)*			

The scores of the Guangzhou group in the three conditions were significantly higher than the Hong Kong group. Results of the t-test confirmed the differences. It has to be noted that the scores of the Hong Kong group in both irregular words and pseudowords were below 50% of the total score. Since this task is a forced choice design, the scores of the Hong Kong group were below the chance level. The results may not fully represent their ability to access the phonological codes of the word pairs. On the other hand, the Guangzhou group obtained 61.65% of the pseudoword items. As these items required phonological decoding, and the results therefore suggested that the Guangzhou group not only had better decoding skills, but also developed a phonological strategy for decoding. The performance profiles of the two groups in the three item conditions are shown in Figure 7.3.

Figure 7.3: Performance profiles on homophone judgment items



The profiles of the two groups were slightly different. As shown in Figure 7.3, judgments of both groups were disturbed when the word pairs had irregular spelling. Results of Hong Kong group in irregular word pairs dropped to below chance level, which indicated that they either have not learnt these words before or could not remember the pronunciation of them. On the other hand, results of the Guangzhou group, though dropped, were still above chance level, suggesting that they could remember the pronunciations in a better way. For pseudowords, results of the Hong Kong group remained below chance level. They had no clue to decode the words they had not seen. But since pseudowords can be decoded by applying GPC rules, the

performance of the Guangzhou group improved and results were slightly better than the irregular words. It is highly possible that the Guangzhou group had applied GPC rules to help them decode the unknown words.

Word naming

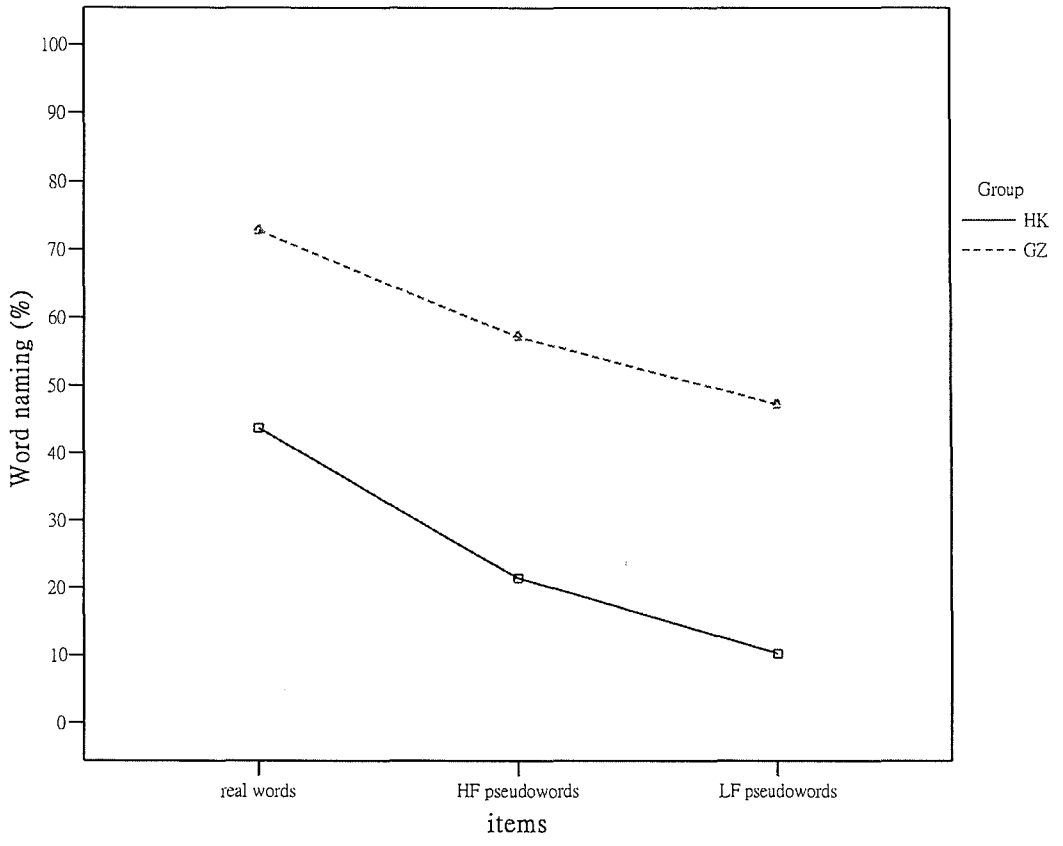
The second task for measuring decoding was word naming. There was significant difference between the mean scores of the two groups, t (136) = -14.99, p<.001; MD = 35.45. The Hong Kong group scored only 26.53% of the task, while the Guangzhou group obtained 61.99%. The results indicated a huge difference in their ability to read aloud English words, be they known or unknown words. Three item conditions were included in this task, namely, real words, pseudowords with high frequency rimes, and pseudowords with low frequency rimes. The phonological encoding of high frequency pseudowords could be based on analogy as the rime units of these words were taken from high frequency real words which are usually read as sight vocabulary. The reading of low frequency pseudowords, however, would not allow the application of analogy as the rime units were probably unfamiliar. These words had to be read with GPC rules. The scores of the two groups in each condition are listed in Table 7.10.

Table 7.10: Means and Standard Deviations for word naming items

Tasks		HK	GZ	*MD* (HK-GZ)	*t-value*	Sig.
Real words	Mean (%)	43.69	72.71	-29.01	-10.06	.001
	Std Deviation	*(13.34)*	*(20.25)*			
High frequency pseudowords	Mean (%)	21.40	57.16	-35.77	-9.69	.001
	Std Deviation	*(17.76)*	*(25.37)*			
Low frequency pseudowords	Mean (%)	10.25	47.14	-36.89	-12.83	.001
	Std Deviation	*(12.07)*	*(21.06)*			

The performance of the Guangzhou group was much better than the Hong Kong group in all three item conditions. The t-test confirmed the significant differences between the two groups. Although both groups were affected by the frequency of the words, the effect on the Hong Kong group was stronger. As shown by the mean differences, the gap between the two groups became bigger when the word items became more unfamiliar. The performance profiles of the two groups in the three item conditions are shown in Figure 7.4.

Figure 7.4: Performance profiles on word naming items



Although the two groups had similar performance profiles in the three conditions, the scores of the Hong Kong group in the two pseudoword conditions (both high and low frequency) were very low, $\underline{M}$ = 21.39% and $\underline{M}$ = 10.25% respectively. They found it very difficult to read aloud unfamiliar words. The scores of the Guangzhou group were much higher than the Hong Kong group. The Guangzhou group's mean score on high frequency pseudowords, $\underline{M}$ = 57.17%, was higher than their score on low frequency pseudowords, $\underline{M}$ = 47.14%, suggesting that they were more ready to use onset-rime analogy than GPC rules for decoding unfamiliar words.

Although the mean scores of the Guangzhou group were significantly higher

than the Hong Kong group, there is concern about the large standard deviations found in the results of the Guangzhou group. The large standard deviations suggested that there was a wide range of abilities in the group. While the majority of the Guangzhou group achieved an acceptable level of phonological decoding skills, there are still some weak ones in the group. To further examine of the distribution of results, a frequency table was drawn for each item condition. Table 7.11 shows the distribution of results of both group in the word naming task.

Table 7.11: Distribution of results in word naming task

Range (%)	real words		HF Pseudowords		LF Pseudowords	
	Frequency		Frequency		Frequency	
Group	HK	GZ	HK	GZ	HK	GZ
0	0	2	12	4	31	4
1-10	1	0	15	0	20	1
11-20	2	0	18	0	9	1
21-30	8	0	8	3	6	7
31-40	29	1	4	6	5	6
41-50	12	5	13	16	3	20
51-60	16	8	3	7	0	8
61-70	4	6	0	7	0	9
71-80	2	21	1	8	0	6
81-90	0	10	0	3	0	2
91-100	0	11	0	10	0	0

The distributions shown in Table 7.11 confirmed the observation that there were still a small number of students in the Guangzhou group who were particularly weak in decoding unfamiliar words. It seemed that they had difficulties in using phonological skills for decoding English words, especially unfamiliar words. Since their Pinyin ability was not tested, it is not clear whether their difficulties was due to

their lack of phonological skills, just like of the Hong Kong students, or they were not able to transfer the phonological skills developed in their pinyin experience for decoding English words.

7.3.5 Comparison of Spelling

The spelling task measured skills in recoding from a phonological input into its corresponding written code. Students were required to write down the words they heard from the teacher. An Independent-samples *t*-test was run to compare results of the two groups in this task. Results are shown in Table 7.12.

Table 7.12: Group comparison of spelling

Tasks		**HK**	**GZ**	***MD*** (HK-GZ)	***t-value***	**Sig.**
Spelling	Mean (%)	39.56	38.23	1.33	.66	.51
	Std Deviation	*(11.06)*	*(13.59)*			

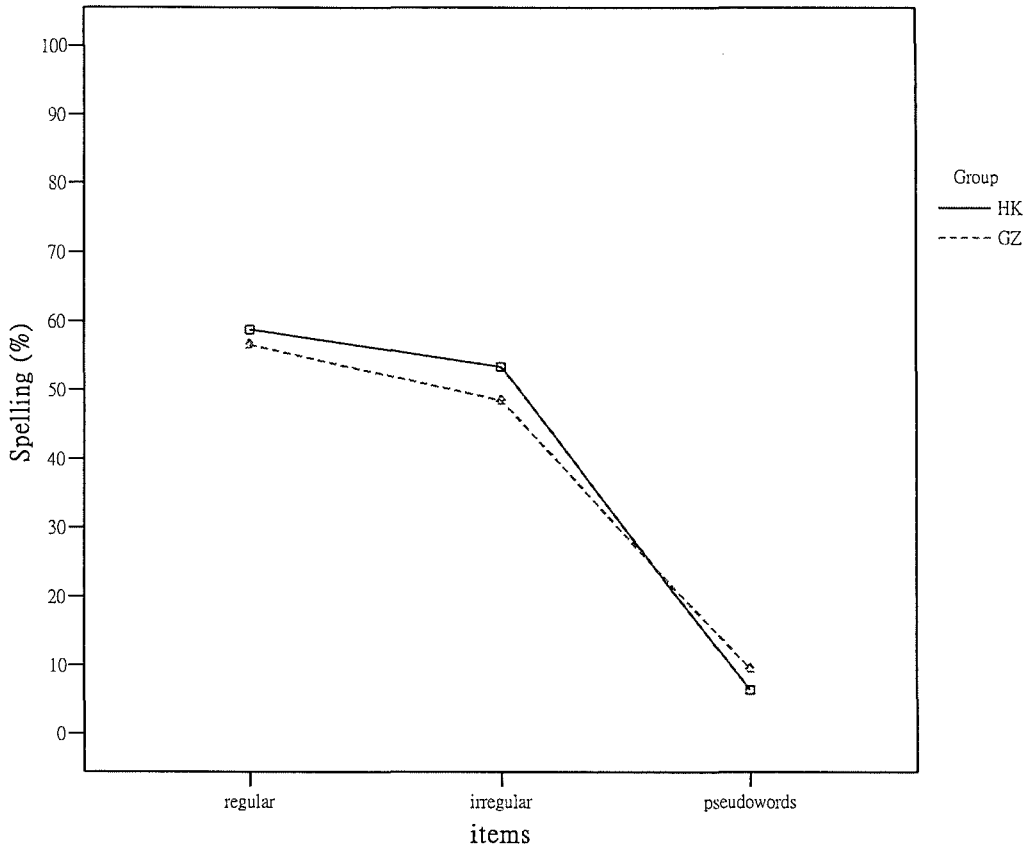
Results of the t-test indicated no significant difference between the two groups' ability to spell. The mean scores were very similar, but also quite low. Both groups scored less than 40% in this task. As there were three types of items used in this task, and they required different skills for recoding, the two groups' performance in the three item conditions were further examined and reported in Table 7.13.

Table 7.13: Means and Standard Deviations for spelling items

Tasks		**HK**	**GZ**	***MD*** (HK-GZ)	***t-value***	**Sig.**
Regular words	Mean (%)	58.80	56.58	2.22	.80	.43
	Std Deviation	*(13.95)*	*(19.86)*			
Irregular words	Mean (%)	53.47	48.48	4.99	1.59	.12
	Std Deviation	*(20.30)*	*(18.61)*			
Pseudowords	Mean (%)	6.40	9.49	-3.09	*-1.85*	.07
	Std Deviation	*(10.48)*	*(10.24)*			

The performances in the three item conditions were different. The scores for regular and irregular words were similar. Both groups scored around 50%. But when they came to pseudowords, their scores dropped dramatically. Both groups scored less than 10% for the pseudoword items. An independent samples t-test was used to compare the two groups' results in the three item conditions. Results showed no significant difference between the two groups in any of the three conditions. Both groups performed in a similar pattern in this spelling task. Their performance profiles are shown in Figure 7.5.

Figure 7.5: Performance profiles on spelling items



Both groups had similar scores in spelling irregular words. Since irregular words may not be recoded with GPC rules, and are expected to be spelt as sight vocabulary, the group's results suggested that they had similar sight vocabulary in memory. On the other hand, spelling regular words may require either the application of GPC rules or memory, depending on whether the words were familiar or not. By comparing the two groups' performance in regular word spelling to their performance in pseudoword items which indicated that they were not able to spell unfamiliar words, it is highly possible that both groups spelled the regular words as sight words from their memory.

7.3.6 Correlations

In order to test the relationship between phonological skills, decoding skills and reading ability, the scores of the sub-tasks used to measure phonological skills and decoding skills need to be combined to create single scores that represent the phonological skills and decoding skills of the two groups. To do that, the correlations between the two phonological skills tasks and the two decoding tasks were computed to determine the internal relationships of the two sets of tasks.

The correlation between the two phonological skills (rhyme judgment and phoneme deletion) tasks was significant, $\underline{r} = .48$, $p<.01$; whereas the correlation between the two decoding tasks (homophone judgment and word naming) was also significant, with $\underline{r} = .70$, $p<.01$. To further investigate the relationship between phonological skills and decoding, the scores of the tasks in each set of skills were combined to create representing scores of phonological skills and decoding efficiency respectively (similar treatment of scores found in Huang & Hanley 1995).

As shown in the test results, the Guangzhou group had significantly higher scores in the phonological tasks than the Hong Kong group, it was expected that the Guangzhou group would rely more on phonological skills for decoding, recoding, and for text reading. Separate correlational analyses based on the combined scores were conducted for the two groups with the purpose of identifying the different effects of

phonological skills on decoding, reading and spelling. Table 7.14 listed the correlations computed for each group:

Table 7.14: Correlations of skills and reading outcomes

	reading comprehension		**Spelling**		**phonological skills**	
	HK	GZ	HK	GZ	HK	GZ
spelling	.50**	.59**				
phonological skills	.25*	.34**	.35**	.55**		
decoding skills	.27*	.44**	.41**	.66**	.47**	.73**

** Correlation is significant at the .01 level (2-tailed).

* Correlation is significant at the .05 level (2-tailed).

As shown in Table 7.14, all the correlations were significant. There was much stronger correlation found between phonological skills and word decoding among the Guangzhou group (r = .73). The group relied heavily on phonological skills for decoding, with phonological skills accounted for 53% (r^2 = .53) of their variance in decoding. The predictive power of phonological skills on decoding was much smaller among the Hong Kong group, r^2 = .22, which suggested that the Hong Kong students might rely more on skills other than phonological skills for word decoding.

A similar pattern was found in spelling. The correlation between phonological skills and spelling was also stronger among the Guangzhou group than the Hong Kong group, r = .55 and .35 respectively, although the effect size was smaller in both groups, r^2 = .30 and .12, indicating that phonological skills accounted for 30% and 12% of the variance in the spelling results of the Guangzhou group and Hong Kong group respectively. The predictive power of phonological skills on spelling among the

Guangzhou group was higher than the Hong Kong group, which also suggested that the Guangzhou group relied more on phonological skills for spelling than the Hong Kong group.

The correlations between phonological skills and reading comprehension were significant in the Hong Kong group and the Guangzhou group, with $\underline{r}$ = .25 and .34 respectively. The correlations between word decoding efficiency and reading comprehension were also significant, $\underline{r}$ = .27 and .44 respectively. The effect size of both phonological skills and decoding on reading comprehension was stronger among the Guangzhou group than the Hong Kong group, which indicated that the Guangzhou group relied more on phonological skills for decoding and reading.

7.4 General Discussion

This study compared two groups of Chinese ESL learners on their phonological skills and L2 reading development, attempted to identify the relationship between the two in the context of Chinese learners learning to read English as a second language. The comparisons were made on the basis of two groups coming from the same L1 background. The two groups shared the same mother tongue and the same culture, and received similar types of English instruction in the classroom. They also had similar reading ability. However, the two groups were different in two aspects. First, they had

different L1 literacy experience in that the Guangzhou group had learnt Pinyin as a tool for reading Chinese characters while the Hong Kong group had no such experience. Second, the two groups had different quantity and quality of exposure to English. The Hong Kong group had a much longer learning period of English than the Guangzhou group before they attained the existing reading level. Besides, Hong Kong provides a richer environment for learning English where there are many opportunities for students to use English either in school or in the community.

The two groups had different L1 literacy experience and L2 exposure. They were expected to develop phonological skills in different ways. The Guangzhou group received direct instruction in Pinyin which gives them analytical experience on the phonological components of letter strings and such skills were expected to be transferred to L2 reading. The Hong Kong group did not learn Pinyin for L1 word recognition, and received no explicit instruction in phonics for L2 reading. They were expected to develop phonological skills in their L2 exposure.

Four hypotheses were drawn on the comparisons made between the two groups in terms of their English phonological skills, decoding skills, reading comprehension and spelling. The first hypothesis predicted better phonological skills among the Guangzhou group. Results of the two phonological tasks confirmed this hypothesis. The Guangzhou group scored significantly higher than the Hong Kong group in the

rhyme judgment and phoneme deletion tasks. They showed better phonological skills at both the rhyme level and the phonemic level. They were better at making judgments on rhyming word pairs and also at identifying and manipulating phonemes at specified positions within a given word. The superior performance of the Guangzhou group could probably be attributed to their Pinyin instruction which required processing of phonemic units within a letter string for accessing the phonological code of the Chinese character represented by the letter string. It seems that phonological skills at sub-syllabic level were developed and transferred to the learning of English. The phoneme deletion task required phonemic skills at sub-syllabic level and such skills are not necessary for accessing the phonological code of Chinese characters which are all represented by syllables rather than phonemes. Without Pinyin instruction, phonological awareness at sub-syllabic level will generally not be developed among Chinese speakers.

On the other hand, in the case of the Hong Kong group, such skills perhaps were not available for transfer to the learning of English. The "look and say" method which had been used for teaching Chinese as well as English decoding could also explain Hong Kong students' underdeveloped phonological skills. The performance of the Hong Kong group also suggested that phonological skills could possibly be developed in the language environment but the process appeared to be very slow and results

might not be reliable. The large range of ability of the Hong Kong group as indicated by the standard deviation suggested that the rate of developing phonological skills through exposure to the language depended heavily on individual sensitivity to the language. As shown in Figure 7.2, some students in the Hong Kong groups scored less than 10% of the test, which indicated that some students may be slower than the others. Without direct instruction, they were not able to develop phonological skills even after years of exposure to the language environment. In comparison, direct instruction was shown to be more reliable in developing phonological skills. It was also more effective as the Guangzhou group had received intensive instruction in Pinyin in their first year of primary school and was able to continue to use the skills even though they no longer used them in reading Chinese. The much smaller standard deviation in their results indicated that the variations are smaller and most of them had developed their phonological skills well.

The second hypothesis predicted that the Guangzhou group would rely more on phonological skills for decoding than the Hong Kong group. This is also confirmed by the stronger correlation found among the Guangzhou group between the phonological skills tasks and the decoding tasks. The very high correlation ($\underline{r}$ = .73) and the large effect size ($\underline{r}^2$ = .53) indicated that the Guangzhou group relied heavily on phonological skills for decoding. As the alphabetic nature of the English language

requires phonological skills for decoding, the better phonological skills of the Guangzhou groups thus led to their higher scores in the decoding tasks. The correlation found among the Hong Kong was medium ($\underline{r}$ = .47), suggesting that they relied only partly (22%) on phonological skills for decoding, and they were using other skills, such as visual skills to help them decode the English words. Their results in the decoding tasks, however, showed that such strategies were less effective.

The Hong Kong group found the two pseudoword conditions (both high and low frequency) in the word naming task very difficult ($\underline{M}$ = 21.39% and $\underline{M}$ = 10.25% respectively). The scores indicated that they were not able to use analogy or GPC rules to access the phonological code of unfamiliar words. The Guangzhou group, on the other hand, showed that they could use analogy to tackle the high frequency pseudowords, $\underline{M}$ = 57.17%. This could be related to their training in Pinyin which transcribes the phonological code of each monosyllabic Chinese character into a transliteration comprises of onset and rime. Their experience of segmenting and blending onset and rimes in the Pinyin transliterations was transferred to L2 decoding. This explains their much higher scores in reading aloud the pseudowords, especially the ones with a familiar rime in it. The Guangzhou group also managed to apply GPC rules to access the phonological code of some of the low frequency pseudowords, $\underline{M}$ = 47.14%. The results indicated that the Guangzhou group was more competent in using

phonological skills, at onset and rime level as well as at phonemic level, to sound out unfamiliar words.

The comparison of the two groups' performance in decoding found significantly higher scores among the Guangzhou group and thus confirmed findings in L1 reading research reported in Chapter 3, Section 3.3 (e.g. Lundberg, Olofsson, & Wall 1980, Bradley & Bryant 1983, Vellutino & Scanlon 1987, Wagner & Torgesen 1987, Juel 1988, Chapman, Tunmer & Prochnow 2001, Stuart 1999, 2004) that phonological skills are more important than other skills for decoding English words, and L2 learners who are weak in phonological skills will have difficulties in decoding English words. Although L2 learners might have developed other skills for decoding, such skills are shown to be less effective than phonological skills.

On the other hand, the high standard deviation shown in the scores of the Guangzhou group in the word naming task suggested that not all the students in the Guangzhou group managed to transfer the phonological decoding skills they developed in their Pinyin experience to read English words. There is the possibility that these students were weak in Pinyin as well. But since the design of this study is focused on comparing the English phonological skills of the two groups of Chinese ESL learners, their L1 proficiency was not included in the test batteries. It is not clear whether these weak cases were due to weak pinyin skills or failure of transfer. Both

possibilities, however, signalled that Pinyin experience may not be a reliable base for all Chinese ESL learners for developing English phonological skills. It cannot be assumed that alphabetic experience developed in L1 will automatically be transferred to the learning of L2. Direct instruction in English phonological skills may be a more reliable way.

To test the third hypothesis, which predicted that the Guangzhou group relied more on phonological skills for reading than the Hong Kong group, the relationship between phonological skills and reading comprehension was examined. As predicted, stronger correlation was found among the Guangzhou group. Analyses of the correlations between phonological skills, decoding and reading comprehension found significant correlations among the three in both groups, with stronger correlations found among the Guangzhou group. The hypothesis is confirmed.

The different correlations between phonological skills and decoding and the different predictive power of decoding on reading comprehension found in the two groups suggested that the two groups relied on different skills for decoding and for reading. The Guangzhou group relied heavily on phonological skills for decoding and the phonological strategies they developed for decoding also strongly predicted their reading ability. The much stronger correlations between phonological skills and decoding and between decoding and reading comprehension found among the

Guangzhou group depicted the indirect influence of phonological skills on reading comprehension. The Hong Kong group relied on phonological skills, to a much lesser extent, for decoding. They may rely on other skills, such as visual skills, to decode English words. In this way, they seemed to be less efficient in decoding, as their visual memory could be overloaded and confused with similar looking words.

Hypothesis 4 predicted a stronger relationship between the phonological skills and spelling among the Guangzhou group. Group comparisons between the correlations of phonological skills and spelling confirmed that the Guangzhou group relied on phonological skills for spelling more than the Hong Kong group. Phonological skills accounted for 30% of the variance in spelling among the Guangzhou group, whereas the effect size found among the Hong Kong group was 12%. Therefore the fourth hypothesis was confirmed. However, comparisons of the two groups' performance on the spelling task did not show any significant difference. The Guangzhou group did not perform better than the Hong Kong group. The performance profiles of the two groups were also very similar in all the three item conditions. Both groups had difficulties in spelling pseudowords. Since pseudowords are unknown words and cannot be spelled from memory, it requires the use GPC rules to encode the phonological input into a visual code, the two groups' poor performance in this item condition indicated that they were not able to use the GPC rules for

encoding. They were not able to write out words they had not seen before. The two groups' difficulties in this task may be attributed to the influence of the Chinese orthography which emphasises visual learning and memorization. Because of its logographic nature, there is no clue for someone to write out an unknown Chinese character based on the phonological code. Thus this L1 learning habit may have influenced the Chinese learners to rely heavily on visual decoding and discouraged them to write out any unknown English words based on the phonological code.

It has to be noted that the Guangzhou group had a shorter ESL learning experience and limited language environment, but they managed to spell as well as the Hong Kong group. There was no significant difference between the two groups' spelling results. Correlation analyses showed the Guangzhou group may have relied, to a larger extent than the Hong Kong group, on phonological skills for spelling. It is possible that the Guangzhou group's phonological skills had helped them remember words they had come across more easily, so that their spelling ability matched the Hong Kong group's within a shorter learning period.

Results of this comparison study showed that the Guangzhou group had better phonological skills and had relied more on such skills for decoding, spelling and reading. Their higher scores in phonological and decoding tasks and their higher correlation found between decoding and phonological skills also indicated that

phonological skills are more efficient for decoding English words. Phonological skills, as a strong predictor of decoding, in turn, is also a strong predictor of reading skills. The better phonological skills and decoding ability of the Guangzhou group thus explained why they had been able to achieve the present reading ability in a shorter learning period than the Hong Kong group. The two groups started learning English at different ages but both attained the same reading level at the time this comparison study was conducted. Given that their cultural and linguistic backgrounds were similar, the different rates of L2 reading development could be attributed to the differences in their phonological abilities. Apart from reading, the Guangzhou managed to spell as well as the Hong Kong group. As shown in L1 reading research, reading ability in alphabetic languages is closely related to phonological skills. The L2 reading development of the Guangzhou group adds to the L1 research findings that the same relationship could also be found in L2 context.

The superior performance of the Guangzhou group in the phonological skills tasks has two implications. The first is the transfer of L1 skills to L2 learning. The Guangzhou group developed their phonological skills in Pinyin, which is part of their L1 literacy experience. As Pinyin is alphabetic in nature, the phonological skills used in Pinyin were transferred to the learning of an alphabetic L2, and thus facilitated their L2 phonological skills. The second implication is that direct instruction is more

effective than language exposure in developing phonological skills. The Guangzhou group received direct instruction in Pinyin, whereas the Hong Kong group did not learn Pinyin and had no explicit instruction in phonics or similar training in phonological skills. Comparisons showed that the Guangzhou group had not only gained higher mean scores in the phonological tasks, but also had much smaller range and standard deviation. The results suggest that direct instruction is a more effective and reliable way to ensure the development of phonological skills.

The Guangzhou group also had better decoding skills. They had higher mean scores in the two decoding tasks. Strong correlations were also found between phonological skills and decoding among the group, thus suggesting that the group had been using phonological strategy for decoding. Their better phonological skills thus led to their better decoding skills. However, the large standard deviation found in the Guangzhou groups' decoding scores showed that some students in the group did not manage to develop their decoding skills to the expected level. Although it is not clear whether their problems were due to failure of transfer between L1 and L2 learning, or failure of their Pinyin learning in terms of developing their phonological skills, these cases raised a pedagogical concern about relying on the transfer of L1 skills for L2 development. The issue of L1 and L2 transfer can be further investigated in future research.

The pedagogical implication of this comparison study is in favour of direct instruction in phonological skills. The learning of Putonghua is now included in the curriculum in many schools in Hong Kong, but for only two lessons per week (1.5 hours), as a foreign language. Even though Putonghua is taught in schools, Pinyin is not taught as a mediation tool for L1 word recognition because children in Hong Kong still learn to read Chinese primarily in Cantonese. The Chinese characters are still taught with the 'look and say' method. Pinyin is not used for decoding unfamiliar Chinese words. So it will be difficult to expect students to develop the alphabetic L1 literacy experience as the Guangzhou group does. Moreover, as shown by the large standard deviation of the group's results, the transfer of L1 skills appropriate for L2 deciding is not available among the group. A more direct way to alleviate the Hong Kong students' phonological deficiency might be to include phonological skills training in the curriculum. The direct instruction in English phonological skills is expected to facilitate the L2 reading development. According to the training studies and longitudinal studies in the L1 context discussed in the literature review section, improvement in phonological skills will lead to improvement in reading. With the strong relationship found in this comparison study, it is expected that the same effects found in L1 will also be found in the L2 context. To further prove these effects, training studies in the L2 context are needed. This suggestion will lead to two further

research questions. First, w*hat is the effect of phonological skills training in the L2 reading performance of Chinese ESL learners in Hong Kong?* Second, w*hat is the suitable level for phonological skills training in the L2 context of Chinese ESL learners in Hong Kong?* The two training studies reported in the following chapters attempt to answer these two questions.

8. Study II: Training study in phonological skills for Secondary One students in Hong Kong

8.1 Objectives

The comparison study reported in the previous chapter provided evidence for the strong relationship between phonological skills and the L2 reading development of Chinese ESL learners. In the case of the ESL learners in Guangzhou, they have developed better phonological skills in their experience of learning and using Pinyin. The phonological skills have been transferred to L2 learning and enabled them to develop more efficient L2 decoding skills and also facilitated faster development of L2 reading proficiency such that they could match the level of the Hong Kong group within a shorter L2 learning period. Based on the strong relationship identified between phonological skills and English reading, it is expected that the Hong Kong students will be able to improve their English reading proficiency if their phonological skills are improved. This causal relationship can only be confirmed by a training study. There are two research questions raised in Chapter 6 related to phonological training for Hong Kong students. The first question is "*What is the effect of phonological skills training on the L2 reading performance of Chinese ESL learners in Hong Kong?*" and the second is "*What is the most suitable level of phonological skills training in the L2 context of Chinese ESL learners in Hong*

Kong?". The training study reported in this chapter aims to provide information to answer these two questions.

As shown in the comparison study, S.1 students in Hong Kong were still weak in phonological skills even after learning the language for at least six years and being exposed to a rich language environment. It is also possible that their weak phonological skills could be a hindrance to their L2 decoding and reading development. Previous L2 research (Haynes & Carr 1990; Holm & Dodd 1996; Huang & Hanley 1994; Jackson, Lu & Ju 1994; Rickard-Liow & Poon 1998) on adult Chinese ESL learners showed that the inadequacy in phonological skills had never been fully developed. The adult learners after further years of English learning still lagged behind learners from other alphabetic language backgrounds. It appears that the problem, which is allegedly caused by the influence of the orthographic nature of their mother tongue, will not disappear as the learners grow older or become more efficient. Intervention programmes will be needed to help the older children and adult learners to improve their phonological skills in order to facilitate their decoding and reading development. However, apart from the fact that there is little information on the effect of phonological skills training on L2 learners, especially Chinese ESL learners, there is also a lack of information from L1 training studies on older students. Most L1 training studies were conducted with young learners, mostly kindergarten or

Grade 1 students (Bradley & Bryant 1983; Brennan & Ireson 1997; Byrne & Fielding-Barnsley 1991; Treiman & Baron 1983). As Troia (1999) commented, "we have no credible data regarding the effectiveness of metaphonological training for older students" (p.49). It is not even clear whether the kind of phonological skills training used for young learners will also be effective on older learners. Therefore, phonological skills training study on older learners is needed, first, to cater for the urgent needs of this learner group who had been suffering from the phonological inadequacy for long; second, to contribute to the existing knowledge base about the training effects of phonological skills on reading development.

The training study reported in this chapter aims to investigate the effectiveness of a phonological skills intervention training programme to students in Hong Kong at secondary school level. The study was conducted at Secondary One level, which is the same level as the Hong Kong group that participated in the comparison study reported in Chapter 7. The effect was tested in a pre-test – training – post-test control group design. The experimental group received phonological training while the control group received no such training. Alternative treatment was given to them instead. Both groups were measured on phonological skills, decoding skills, reading comprehension and spelling before and after the training period. By comparing the test results of the two groups and their developmental profiles during the training

period, this study evaluates the effect of the training in terms of improving the students' phonological skills and the contribution of such improvement in L2 decoding, reading and spelling. Based on the findings in the training studies conducted in L1 context and the comparison studies based on L2 reading, four hypotheses can be drawn.

Hypothesis 1

The experimental group is expected to have significantly more improvement in tasks measuring phonological skills in the post-test than the control group.

Hypothesis 2

The experimental group is also expected to have significantly more improvement in the decoding tasks in the post-test than the control group.

Hypothesis 3

The experimental group will improve more than the control group in reading comprehension in the post-test.

Hypothesis 4

The experimental group will also improve more than the control group in spelling in the post-test.

8.2 Method

8.2.1 Participants

The participants were 63 Secondary One students (35 boys and 28 girls) in a secondary school in Hong Kong. All the students were Chinese students learning English as a second language. Prior to secondary schooling, they had completed six years' primary schooling, as well as 1-3 years in kindergarten. As kindergarten is not considered as formal education in Hong Kong, it depends on the parents' choice of when to send their children to kindergarten. But the minimum age for starting primary school is 5.8. When students finished six years in primary school, they should be at the age between 11.8 – 12.8. After primary schooling, there is a centralized allocation process for placing students to secondary schools. In many cases, students in one primary school may be allocated to different secondary schools. Students spend five years in secondary school, and the first three years are compulsory for all.

The students participating in this study all came from different primary schools. At the time when the study was started, all the students were new to the school. The students belonged to two Secondary One classes (Classes 1A and 1B) and were taught by two teachers. There were altogether four Secondary One classes in the school. According to the school, there was no streaming test administered. When

students were admitted to the school, they were randomly assigned to the four classes. The two classes involved in this research were randomly picked by the school.

The 63 students were randomly assigned to two groups according to their class number. Students were all given a class number which was assigned to them according to the alphabetical order of their last name. Students with an odd number were put in the experimental group whereas those with an even number were assigned to the control group. In this way, the experimental group and the control group would have students from both Class 1A and Class 1B. All possible confounding factors related to the allocation of groups (Troia 1999) had been controlled. However, not every student in the two classes participated in the study. Some students reported that they could not join the training sessions which were run after school because of some family commitments. These students were excluded from the study. There were 39 students in the experimental group and 24 in the control group.

The school was located next to a public housing estate in a residential district in Hong Kong. According to the school, most of their students came from working class families and were living in the nearby public housing estates. The school uses Chinese as the medium of instruction for subjects other than English, but students were encouraged to read reference and supplementary materials in English. According to the school, the academic performance of the school is at mid-range level and

English is one of their weak subjects. In Hong Kong, the secondary schools are classified into 3 bandings, according to the standard of their intake of students from primary schools. The school involved in the study is a Band 2 school. There were nine 40-minute English lessons per 6-day teaching cycle. The 6-day teaching cycle is commonly used in secondary schools in Hong Kong. Instead of arranging the teaching time-table according to the calendar week (from Monday to Friday), the school assigned the weekdays in 6-day cycles (from Day 1 to Day 6) irrespective of the weekends and the public holidays. In this way, the school and the teachers can precisely check the number of teaching days (i.e. number of lessons for each subject) in a school term.

English teaching was based on a set of standardised textbooks and the nine lessons were scheduled for Grammar, Dictation, Composition, Listening and Reading Comprehension. Phonological skills were not covered in the teaching syllabus. The four Secondary One classes in this school were taught by 4 different teachers. The teachers teaching the two classes participating in this study (Classes 1A and 1B) were university graduates, majored in English, with 2 and 4 years' teaching experience respectively. Before the school term starts, the teaching team would plan the teaching scheme together and would produce a scheme of work which specified the syllabus to be covered and the process for all the four classes.

8.2.2 Procedures

The study was conducted in the first term of the school year. As the students were all Secondary One students, and were new to the school. Both the experimental group and the control group were pre-tested in the first week of the school term. The training programme commenced in the second week. The two groups were given a one-hour session after school every Friday afternoon for twelve weeks. There were altogether twelve sessions (12 hours) given to the two groups. The post-test was conducted one week after the last training session.

The training sessions were given to students outside their normal class hours as an intervention programme. Both the experimental group and the control group were involved in the intervention programme. While the experimental group received additional phonological training every week during the first term, the control group also received alternative training for the same amount of time during the period. The control group functioned as a parallel to the experimental group with the only difference in the type of training they received in the programme. During the training sessions, the control group worked on some speaking exercises focusing on interaction skills. The design was to ensure that the control group also received alternative English input for the same amount of time but with the materials not directly related to phonological skills or reading. In this way, the possible Hawthorne

effect (Troia 1999) would be avoided. The possibility that any greater improvement of the experimental group being caused by their increased exposure to the language will also be minimized. As the nine English lessons in each teaching cycle were pre-set for the teaching of grammar, dictation, composition, listening and reading comprehension, the English teachers confirmed that phonological skills were not covered in the teaching. The English teachers were given a copy of the training materials used in each session, and were asked to confirm that no similar materials or tasks were used in their classes.

Since this training study was conducted in a school, there were some constraints in the arrangements. In Hong Kong, the teaching of English in secondary school is primarily focused on language form and communicative functions. Students are expected to have achieved the basic English proficiency level before entering secondary school. When this training study was introduced to the school, because of the tight teaching schedule, the school found it inappropriate to include the training sessions in the regular time-table, because phonics or other explicit instructions in phonological skills are not included in the teaching syllabus. As mentioned above, all the nine English lessons had been assigned for specific areas. Therefore, the training sessions could only be arranged as a kind of after school activity conducted every Friday afternoon. The advantage of this arrangement is that it allows the two classes

to be combined and then divided into different groups, forming the experimental group, and the control group, such that there are students from each class in both the two groups. The disadvantage is that the training programme cannot be tried out in the normal teaching curriculum and the applicability of the phonological training into the mainstream teaching is not clear.

It was also the general practice of the school that different teachers were assigned to teach different classes in Secondary One. So it was not possible for the school to arrange the two classes involved in this study to be taught by the same teacher. There is the potential danger that one teacher had been teaching better than the other and the results of the study might have been due to the different teaching style. However, the possible teacher effect is counterbalanced by the mixed-class grouping in both the experimental group and the control group. Moreover, the training materials used for both groups were not delivered by the teachers. The phonological training sessions were delivered by the researcher whereas the sessions for the control group were taught by another English teacher not belonging to the school. The potential teacher effect may exist as the experimental group and the control group were taught by different teachers, but because of the constraint of arrangements in the school, the sessions for the two groups had to be run in the same time slot. The

possible teacher effect was expected to be minimized by making the different training focuses for the two groups clear to the teacher of the control group.

Before the training, a form was sent to the parents by the school to obtain their consent for the students to stay behind in school for one hour every Friday afternoon in the first term. The parents and the students were told that supplementary English lessons would be given during this period but the contents of the sessions would not be included in the school assessment. However, they were not told about the different training focuses in the two groups. The students were encouraged to attend all the sessions.

8.2.3 Test instruments (Please refer to Appendix 2)

The primary objective of this training study was to compare results of the experimental group and the control group in order to identify effects of the phonological training programme. As the students in this study were at similar age and proficiency level as the Hong Kong group participating in the previous comparison study, the same test instruments were used for this study. A parallel test set was constructed for the post-test procedures. Consistent with the comparison study, the test batteries measured the same skills, namely, phonological skills, decoding skills, reading comprehension and spelling. The tests were administered in school. Students in each class were group-tested in 2 sessions. The first session was held in

their classroom while the second session was held in the language laboratory in the school. Both classes had the tasks in the same sequence. Instructions were given in Cantonese to ensure that all of them could fully understand the tasks. The table below lists the tasks used to measure reading comprehension, phonological skills, decoding skills and spelling. The tasks were the same as those used in Study I, details of the task design were described in the Chapter 7.

Table 8.1: Summary of tasks

Task type	Task	Items	Venue	Skills measured
Reading comprehension	reading section of KET	55 items	classroom	ability to understand different types of text
Phonological Skills	rhyme judgment task	20 word pairs: • 5 orthographically similar rhyming pairs • 5 orthographically similar non-rhyming pairs • 5 orthographically dissimilar rhyming pairs • 5 orthographically dissimilar non-rhyming pairs	language laboratory	sensitivity to rhyme in spoken words
	phoneme deletion task	30 items: • 15 for initial phoneme • 15 for final phoneme	language laboratory	ability to identify and manipulate specified phoneme in a spoken word
Decoding Skills Spelling	homophone judgment task	30 items: • 10 real word pairs with regular spelling • 10 real word pairs with irregular spelling • 10 pseudoword pairs	classroom	ability to access the phonological code of a word through its visual cue
	word naming task	39 items: • 15 real words • 12 High frequency pseudowords • 12 low frequency pseudowords	language laboratory	ability to recode from the visual representation of a word for its phonological representation
spelling test		30 items: • 10 regular spelling • 10 irregular spelling • 10 pseudowords	language laboratory	ability to recode from a phonological code to a graphemic representation

8.2.4 Task reliability

Reliability tests were run to estimate the internal consistency of items in each task. As there are multiple items in each task and the multiple items are summed to obtain a total score, the Coefficient alpha of each task was used. The reliability of each task is reported in Table 8.2. Both the reliabilities of the pre-test and that of the post-test were checked and reported.

Table 8.2: Task reliabilities

Tasks	No. of items	Pre-test Alpha	Post-test Alpha
reading comprehension	55	.70	.82
rhyme judgment	20	.62	.68
phoneme deletion	30	.86	.67
homophone judgment	30	.52	.74
word naming	39	.82	.79
spelling	30	.73	.74

The tasks have the value for coefficient alpha between .52 to .86. In general, the reliability was satisfactory (Green, Salkind, & Akey 2000), although it is noted that the reliability of the homophone judgment pre-test was slightly lower than expected (Alpha = .52). There are many factors that contribute to the low reliability of a test, as Hatch and Lazaraton (1991) explain, and one is "Ss' lack of familiarity with a particular type of test" (p. 530). This is highly possible for the homophone judgment tasks, and perhaps the rhyme judgment task as well, because these phonological features did not receive much attention in the school curriculum and the students were

not familiar with the tasks. When they did the similar types of task again in the post-test, the reliability of the two tasks increased to a satisfactory level.

8.2.5 Training programme

The training programme was conducted in the first term of the academic year. It was started in the second week and lasted for 12 weeks, with a one-hour session in each week. The two classes involved in this study were pre-tested in the first week and were post-tested one week after the training programme. As explained above, both the experimental group and the control group received an extra one-hour session per week. Both groups, therefore, received 12 hours of training during this study. Training schedules and lesson plans for the twelve sessions for both groups were prepared before the training programme was started. Each trainer followed the training schedules closely and completed the programme accordingly.

Phonological training for the experimental group

The training approach was focused on phonemic awareness, letter-sound correspondences and intra-word analytical skills such as segmentation and blending, and aimed at providing some initial training to equip students with the basic skills for decoding. As the experimental group in this study were older learners and had been learning English for at least six years in primary school, they were expected to manage the visual discrimination of letters well, therefore, the visual identification of

individual letters was not included in the training. Instead, the training was started with the introduction of rhyming pairs, followed by the identification of consonants, and later on vowels. The twelve sessions were organized as follows:

i.	identification of rhyming pairs
ii. – vi.	identification of consonants and consonant clusters at initial and final positions in words
vii. – ix.	identification of short vowels
x. – xi.	identification of long vowels
xii.	revision of consonants and vowels

A general teaching pattern of providing audio input, followed by letter-sound correspondences, then reinforced by segmentation and blending tasks was used in the training sessions. In each session, the introduction of phonemes was started with audio input given in oddity tasks. Students were asked to identify words with similar properties, e.g. same initial sound or final sound from a list of words read out to them by the trainer. Then, pictures were shown to students and they were asked to read out the names of the pictures and then identify the common initial or final sounds. The written words were then shown side-by-side with the pictures to provide the visual input on the letter-sound correspondences. Further tasks for reinforcement included categorizing picture cards, rhyme matching with pictures, onset-rimes blending, bingo on phonemes, audio-visual matching, phoneme deletion and substitution. Some samples of the training materials are included in Appendix 3.

Communicative tasks for the control group

While the experimental group had training sessions on phonological skills, the control group received parallel sessions based on communicative tasks. The purpose for providing the parallel sessions for the control group was to balance the amount of exposure to English learning during the period of this study. But in order to test the effectiveness of phonological training, the alternative treatment provided for the control group should not be related to phonological skills. Therefore, the twelve sessions for the control group were designed to focus on various communicative tasks based on situations related to students' everyday life. Some sample materials are included in Appendix 4. The sessions were organized as follows:

i. Let's know each other
(Students introduced themselves and their friend to each other and write a short introduction about one of their classmates.)

ii. Describing a picture
(Students described different shapes and a given picture to another student.)

iii. Giving directions
(Students took turns to give directions to each other based on maps given to them.)

iv. Lost in a desert
(Students discussed and planned for actions based on a given situation.)

v. Talking about school rules
(Students expressed their opinions on existing school rules and talked about new rules they would like to add to the list.)

vi. What are you going to do on ....?
(Students used given expressions to talk about their schedule in coming week.)

vii. What's your job?
(Students interviewed each other on different jobs that they were assigned.)

viii. If ...., what would you do?

(Students were given hypothetical situations and were asked to interview each other for answers.)

ix. Who is he?
(Students took turns to describe a person and made guesses based on each other's descriptions)

x. Is Betty the murderer?
(Students were given newspaper articles and were asked to compare and report the case to class)

xi. Story telling
(Students were given pictures and were asked to tell a story based on the pictures.)

xii. Story re-telling
(Based on the same pictures, students were asked to re-shuffle them and tell another story based on the new sequence.)

8.3 Results and discussion

8.3.1 Overall results

The raw scores in the tasks were converted into percentages for easy comparison. The pre-test and post-test percentage scores of the experimental group and the control group are listed in Table 8.3. There was no ceiling or floor effect found in all the tasks, indicating that the test instruments were neither too easy nor too difficult for the students in both groups. The mean score in the Homophone Judgment Pre-test was at around chance level, M = 47.47% for the experimental group and M = 54.72% for the control group. The mean scores in the Word Naming and Spelling pre-tests were low (both below 50%), showing that the students were weak at both decoding and encoding.

Table 8.3: Percentage scores of pre- and post-tests

Tasks			**experimental group**	**control group**
Reading Comprehension	Mean (%)	Pre-test	58.28	64.32
	(S.D.)		*(10.49)*	*(10.14)*
		Post-test	62.56	66.52
			(11.59)	*(12.79)*
Rhyme Judgment	Mean (%)	Pre-test	70.64	76.67
	(S.D.)		*(14.15)*	*(15.65)*
		Post-test	73.97	79.58
			(15.56)	*(14.96)*
Phoneme Deletion	Mean (%)	Pre-test	45.81	51.11
	(S.D.)		*(20.62)*	*(19.90)*
		Post-test	79.23	81.67
			(11.15)	*(10.12)*
Homophone Judgment	Mean (%)	Pre-test	47.27	54.72
	(S.D.)		*(9.10)*	*(15.03)*
		Post-test	60.26	59.58
			(11.46)	*(14.79)*
Word Naming	Mean (%)	Pre-test	27.40	27.74
	(S.D.)		*(11.80)*	*(14.18)*
		Post-test	50.27	57.57
			(13.43)	*(19.71)*
Spelling	Mean (%)	Pre-test	40.94	41.38
	(S.D.)		*(9.95)*	*(14.34)*
		Post-test	35.99	36.64
			(12.04)	*(15.48)*

8.3.2 Comparisons of overall scores

In order to check whether the two groups started with the same levels before the training programme, a one-way analysis of variance (ANOVA) was conducted to compare the pre-test results of the experimental group and the control group. The dependent variables included all the tests administered in the pre-test procedures. Results of the analysis are presented in Table 8.4.

Table 8.4: Results of one-way analysis of variance on pre-test results

		Sum of Squares	Mean Square	F (1, 61)	Sig.
Reading Comprehension	Between Groups	542.57	542.57	5.05	.03
	Within Groups	6550.49	107.39		
	Total	7093.06			
Rhyme Judgment	Between Groups	539.44	539.44	2.49	.12
	Within Groups	13242.31	217.09		
	Total	13781.75			
Phoneme Deletion	Between Groups	417.20	417.20	1.01	.32
	Within Groups	25252.99	413.98		
	Total	25670.19			
Homophone Judgment	Between Groups	826.22	826.22	6.04	.02
	Within Groups	8350.86	136.90		
	Total	9177.07			
Word naming	Between Groups	1.78	1.78	.01	.92
	Within Groups	9912.70	162.50		
	Total	9914.48			
Spelling	Between Groups	2.90	2.90	.02	.89
	Within Groups	8494.16	139.25		
	Total	8497.07			

Results of the ANOVA showed that there was no significant difference in four tasks, namely, spelling, rhyme judgment, phoneme deletion, and word naming. But in reading comprehension and homophone judgment, the control group scored significantly higher than the experimental group. The mean difference was (MD) 6.04% in reading comprehension and 7.45% in homophone judgment. These differences in the pre-test results will be taken into consideration in the analysis of the post-test results.

To compare the two groups' performance after the training programme, another ANOVA was conducted to compare the post-test scores. Surprisingly, none of the differences in the post-test scores between the two groups reach the significance level. Results of the ANOVA are listed in Table 8.5. The two groups started with different levels in reading comprehension and homophone judgment and at similar levels in the rest of the four tasks but arrived at the same level in all tasks after the training. It seemed that the phonological training might have produced some effects on specific areas but not all. The developmental profiles and the comparison of gains of the two groups on the different skills measured were further analysed in the following sections.

Table 8.5: Results of one-way analysis of variance on post-test results

		Sum of Squares	Mean Square	F (1, 61)	Sig.
Reading Comprehension	Between Groups	231.92	231.92	1.596	.21
	Within Groups	8863.70	145.31		
	Total	9095.63			
Rhyme Judgment	Between Groups	467.42	467.42	1.99	.16
	Within Groups	14354.81	235.33		
	Total	14822.22			
Phoneme Deletion	Between Groups	88.16	88.16	.76	.39
	Within Groups	7076.92	116.02		
	Total	7165.08			
Homophone Judgment	Between Groups	6.73	6.73	.04	.84
	Within Groups	10015.49	164.19		
	Total	10022.22			
Word naming	Between Groups	790.85	790.85	3.06	.09
	Within Groups	15790.96	258.87		
	Total	16581.81			
Spelling	Between Groups	6.32	6.32	.04	.85
	Within Groups	11025.15	180.74		
	Total	11031.46			

8.3.3 Comparison of phonological skills

Two tasks were used to measure phonological skills; they are the rhyme judgment task and the phoneme deletion task. There was no significant difference in these tasks in the pre-test; there was also no significant difference in the post-test. It seemed that the two groups performed in similar patterns before and after the training. To further examine the developmental profiles of the two groups in phonological skills, a Mixed model analysis of variance (ANOVA) was run separately on the two tasks to compare the two groups' development on phonological skills during the

training period. For the rhyme judgment task, the mean scores of the pre-test and post-test showed that the two groups improved over time, MD = 6.03% for the experimental group and 5.61% for the control group, but the improvement was very small. The Mixed model ANOVA did not find a significant main effect of time, F (1, 61) = 3.70, MSE = 290.18, p = .06. Neither group made significant improvement in the rhyme judgment task. There was no interaction between time and interaction either, F (1, 61) = .02, MSE = 1.29, p = .90, indicating that the two groups did not differ in their developmental profiles. Nor was the group effect significant, F (1, 61) = 2.69, MSE = 1005.56, p = .11. The experimental group did not have significant improvement in rhyme judgment even after the phonological training.

For the phoneme deletion task, the mean scores of the pre-test and the post-test also indicated improvements in the two groups. The mean difference (MD) was 33.42% for the experimental group and 30.56% for the control group. The Mixed model ANOVA found the main effect of time significant, F (1, 61) = 161.87, MSE = 30403.05, $p < 0.01$, which confirmed the significant improvement of both groups in phoneme deletion over time. However, there was no interaction between time and group, F (1, 61) = .32, MSE = 60.90, p = .57. The group effect was not significant either, F (1, 61) = 1.30, MSE = 444.46, p = .26. Both indicated that the two groups had no significant difference in their developmental profiles. They both developed in

similar patterns in the phoneme deletion task. The experimental group did not improve more than the control group.

Results of the analysis seemed to suggest that the phonological training given to the experimental group might not help them improve their phonological skills. The experimental group did not make any significant improvement in rhyme judgment in the post-test. Although they did show significant improvement in the phoneme deletion task, they did not outperform the control group in the post-test. The fact that the control group also improved in a similar pattern in the phoneme deletion task suggested that the improvement might not be caused by the phonological training. The control group did not receive the phonological training, but still improved as much as the experimental group in the phoneme deletion task. It is possible that the improvements in the phoneme deletion task found in both groups were caused by different means, i.e. by both types of training. But this possibility cannot be confirmed in this research. The effect of the phonological training on improving the experimental group's phonological skills over the training period cannot be identified. The first hypothesis drawn on this training study, which expected the experimental group to have significantly more improvement in tasks measuring phonological skills in the post-test than the control group, was not confirmed.

There are various possible reasons which might explain the improvements in the phoneme deletion task. It is possible that both the phonological training and the alternative treatment or their classroom instruction helped the groups improve their phonological skills. Another possibility is that the items in the post-test were easier than those in the pre-test. The chance that both the phonological training and the alternative treatment had helped to improve phonological skills is not high. First, there were two tasks measuring phonological skills, namely, rhyme judgment and phoneme deletion. Both groups made significant improvement in the phoneme deletion task but not in the rhyme judgment task. If their phonological skills were improved, they should have shown improvement in both tasks. Second, the speaking exercises given to the control group as alternative training were similar to those the students already had in normal classroom because the English curriculum in Hong Kong has put much focus on communicative approach for language teaching. If phonological skills can be developed effectively without explicit instruction, then the inadequacy in phonological skills identified among adult Chinese ESL learners in previous L2 research (e.g. Huang & Hanley 1994, Holm & Dodd 1996) should not have existed. It is doubtful whether additional input of the same type, at least for a period of twelve weeks, will produce different effects. Therefore, the explanation that both groups

improved in the phoneme deletion task because both types of treatment given to them were equally effective is not convincing.

The second possibility is that the items of the phoneme deletion task in the post-test were easier than those in the pre-test. In the item construction process, much effort had been put to ensure that the pre-test and post-test were parallel. For example, the items were grouped into three categories, namely CVC, CCVC and CVCC words, with ten items in each category for initial phoneme deletion, and another ten items in each category for last phoneme deletion. The sixty items were then divided to form the pre-test and the post-test. However, despite the careful construction, it might still be possible that some items were easier for the students than the others. To verify this possibility, a small group of students from the other two Secondary One classes in the same school were invited to take the phoneme deletion task. The purpose was to compare the existing results to a third group who did not receive any type of intervention training.

A group of nine students participated. The pre-test was administered to them with the same procedures and one week later they were given the post-test. The group obtained a mean score of 56.30% in the pre-test and 83.33% in the post-test. Results obtained from this group were compared with those of the experimental group and the control group. A one-way ANOVA was run to compare the mean scores of the three

groups. Results indicated that there was no significant difference among the three groups both in the pre-test ($F(2,69) = 1.30$, $p = .28$) and the post-test ($F(2, 69) = .72$, $p = .49$). Post-hoc comparisons did not find significant difference between any two groups either. This third group of students did not receive any type of intervention training, and there was only a one-week time gap in between the two tests. Without a substantial time gap, the higher mean score that the third group obtained in the post-test suggested that the items in the post-tests might be easier.

Yet another possibility is that the students became more familiar with the instructions for the task when they took the post-test. As students in Hong Kong had learnt to recognize English words with a holistic approach, they were not used to attend to in the elements below word level. They might have difficulties in understanding the instructions. But as they attempted the second time, they might become more familiar with the instructions and this practice effect might have contributed to all the groups' better performance in the post-test. If the above speculations stand, the absence of any significant difference in the post-test scores among the three groups again suggested that neither the intervention training nor the classroom input were effective in improving phoneme deletion. Taking the results of the rhyme judgment task and the phoneme deletion task together, it seemed that the phonological training was ineffective in improving the experimental group's

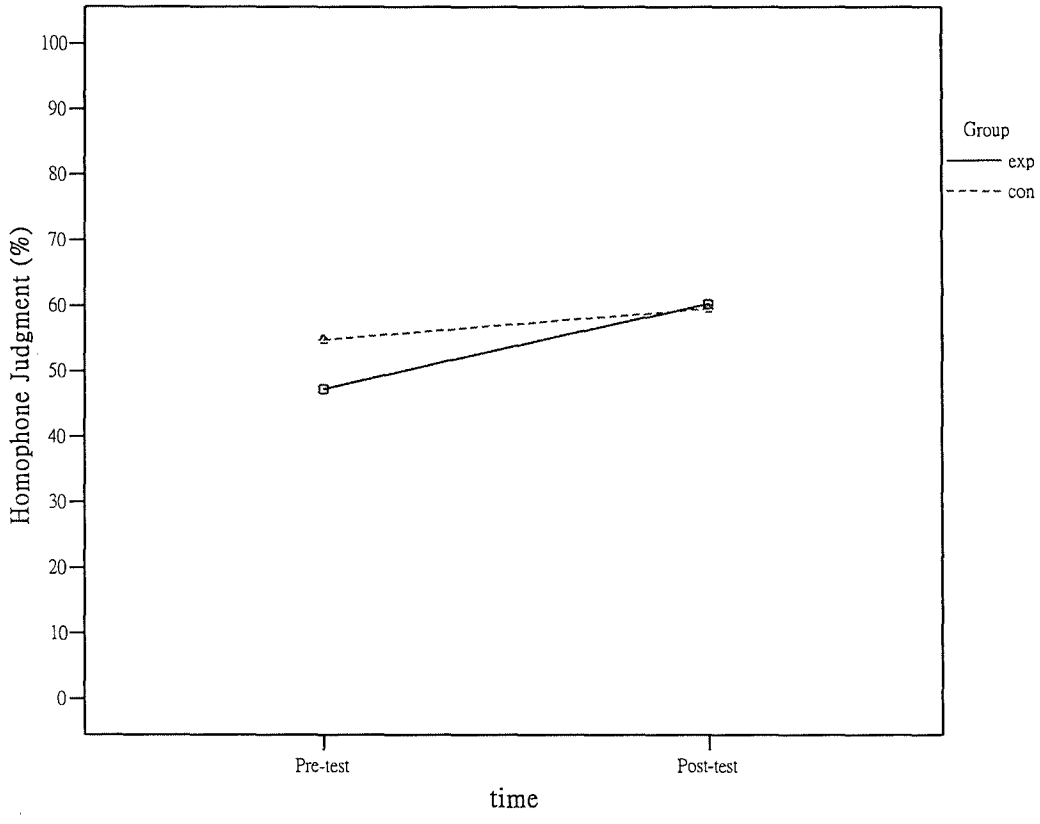
phonological skills. Possible reasons for this will be further discussed in the last section of this chapter.

8.3.4 Comparison of decoding skills

There were two tasks used to measure decoding skills, namely homophone judgment and word naming. To compare the two groups' performance on homophone judgment in the pre-test and post-test, a Mixed model ANOVA was run. The main effect of time was significant, $\underline{F}$ (1, 61) = 19.44, $\underline{MSE}$ = 2367.59, $\underline{p} < 0.01$. The results suggested that both groups improved over time. The time x group interaction effect was just marginally significant, $\underline{F}$ (1, 61) = 4.03, $\underline{MSE}$ = 491.05, $\underline{p}$ = .05. The experimental group has made slightly more improvement than the control group. In the pre-test, the control group scored significantly higher than the experimental group in this task, $\underline{MD}$ = 7.45%. In the post-test, the experimental group had managed to close the gap and there was no significant difference found between the groups in the post-test. But to evaluate the difference statistically, a one-way analysis of covariance (ANCOVA) was conducted with independent variables being the two groups and the dependant variable was the post-test scores of the homophone judgment task; the covariate was the pre-test scores of the task. The ANCOVA was not significant, $\underline{F}$ (2, 60) = .42, $\underline{MSE}$ = 67.71, $\underline{p}$ = .52, suggesting that there was no significant difference between the post-test scores of the two groups, after controlling for their pre-test

scores. Although the experimental group had improved slightly more than the control group in this task, the difference was not big enough to reach the significance level. Figure 8.1 shows the developmental profiles of the two groups.

Figure 8.1: Performance profiles on homophone judgment task



The second task used to measure decoding skills was word naming. The two groups had no significant difference in the pre-test. To compare the two groups' performance in the pre-test and post-test, a mixed model ANOVA was run. The main effect of time was significant, $\underline{F}$ (1, 61) = 175.27, $\underline{MSE}$ = 20630.56, $\underline{p} < 0.01$, indicating that both groups improved over the training period. But the time x group interaction was not significant, $\underline{F}$ (1, 61) = 19.44, $\underline{MSE}$ = 2367.59, $\underline{p} < 0.01$, which

suggested that the two groups did not differ in their developmental profiles. Although both groups improved in word naming, the experimental group did not make more improvement than the control group.

Taking the results of the two decoding tasks together, there was no significant difference between the two groups' performance. Both groups improved in the two tasks, but both also improved at the same rate. The second hypothesis which expected the experimental group to have significantly more improvement in the decoding tasks cannot be confirmed. The fact that the experimental group did not make greater improvement than the control group after the training suggested that the phonological skills training did not produce any direct effect on improving the experimental group's decoding skills. It is also not likely that the improvement of the experimental group in decoding was caused by their phonological skills because results of their phonological tasks showed that they did not make significant improvement in such skills. As both groups improved at the same rate, the improvement may possibly be caused by the input they received from their normal classes. The two groups continued to have their English classes during the training period. The English input they received during the school term might have improved their decoding skills. But their improvement in decoding might be attributed to other skills such as visual skills. They might have improved in visual skills which had led to their better decoding. But

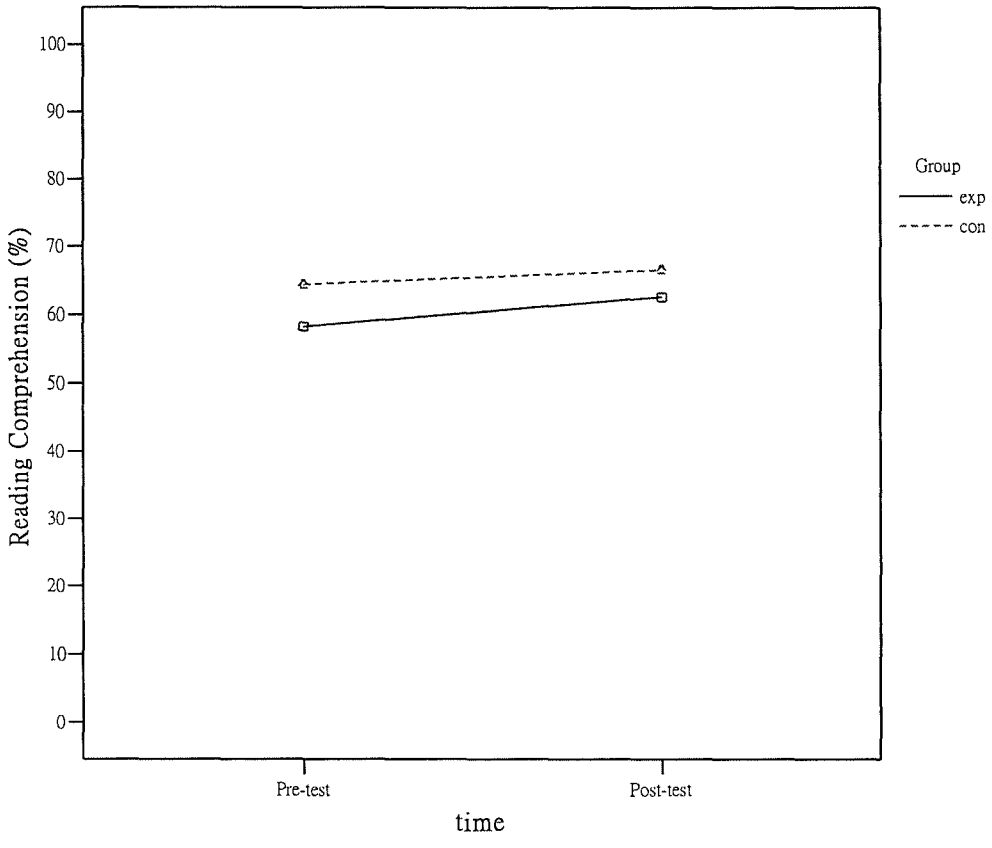
since the design of this study did not include measurement of visual skills, this speculation cannot be verified here. Similar training studies in the future should consider including tools for measuring visual skills as well.

8.3.5 Comparison of reading comprehension

The reading section of two past papers from the Key English Test (UCLES 1997) were used to measure reading comprehension of different types of text. To compare the performance of the two groups in the pre-test and post-test, a Mixed model ANOVA was conducted. The main effect of time was significant, $\underline{F}$ (1, 61) = 5.12, $\underline{MSE}$ = 312.51, $\underline{p} < 0.05$, indicating that both groups improved in the post-test. The improvements made by both groups, though statistically significant, were in fact quite small. The experimental group scored 4.28% higher in the post-test, whereas the control group improved only 2.2%.The time x group effect was not significant, $\underline{F}$ (1, 61) = .53, $\underline{MSE}$ = 32.51, $\underline{p}$ = .47. The results showed that the two groups did not differ in their rate of improvement. The experimental group did not improve more than the control group. However, results in the pre-test showed that there was significant difference between the two groups before the training. The control group scored higher than the experimental group, $\underline{MD}$ = 6.04%. But in the post-test, there was no significant difference between the two groups. To further evaluate the improvement of the experimental group, a one-way analysis of covariance (ANCOVA) was run to

compare the post-test scores using the pre-test scores as a covariate. Results of the ANCOVA was not significant, F (2, 60) = .01, MSE = 1.45, p = .92, which confirmed that the two groups had no significant difference in their post-test scores even after the pre-test scores were controlled for. Both groups obtained higher scores in the post-test, but their developmental profiles were similar. Figure 8.2 illustrates their performance profiles in reading comprehension over the training period.

Figure 8.2: Performance profiles on reading comprehension



The third hypothesis which predicted that the experimental group would improve more than the control group in reading comprehension after the training programme was not confirmed. There was no significant difference found in the two

groups in the post-test. Again it seemed that the phonological skills training did not produce any direct effect on reading comprehension. Although both groups improved in reading comprehension after the training period, it was not likely that the improvement could be attributed to the improvement in phonological skills because both groups did not improve in phonological skills. Since both groups improved at the same rate, it was possible that their normal classroom input might have brought about their improvement in reading comprehension. As there are different component skills contributing to reading comprehension (Haynes & Carr 1990), the students might have developed some of the componential skills which helped them improve their reading ability. But since the focus of the present study was the effect of phonological training in reading development, the measurement of other skills was not included, and therefore it was not clear which skills, other than phonological skills, had led to the two groups' reading improvement over the training period.

8.3.6 Comparison of spelling

Spelling is closely related to phonological skills as spelling a word requires the ability to recode the word from its phonological code to a graphemic representation. The pre-test and post-test each included 30 items and students were asked to write down the words they heard. Results of the pre-test showed no significant difference between the two groups. The post-test also found no significant difference between

the two groups. To examine the developmental profiles of the two groups, a Mixed model ANOVA was conducted to compare the two groups' performance in the pre-test and post-test. The main effect of time was significant, F (1, 61) = 12.03, MSE = 697.91, $p < 0.01$, but the time x group interaction was not significant, F (1, 61) = .01, MSE = .33, $p = .94$. However, instead of improving in the post-test, both groups did worse on the post-test, with mean scores lower than on the pre-test. The results indicated that neither the phonological training nor the interaction practices the two groups received had any effect in improving their spelling. Their normal classroom input was not effective either as both groups did not improve.

There were three types of items included in the spelling task, namely regular words, irregular words and pseudowords with regular spelling. The two groups' performance in the three item types were examined to further explore possible differences between the two groups and explanations for the decline of performance in the post-test. To spell English words with regular spelling, one has to either use the grapheme-phoneme conversion rules to recode phonological codes into written words, or rely on memorisation. In the former case, students should be able to spell both familiar and unfamiliar words, and their ability to spell should be closely related to their phonological skills. But in the latter case, they can only spell those words they had memorized, and phonological skills will not be a determining factor. To spell

words with irregular spelling, one can only rely on memorization. Their ability to spell irregular words depends on whether they have learnt the words before. On the other hand, the pseudowords cannot be spelt from memory because these should all be unknown words. But with regular spelling, the pseudowords can be spelt with phonological rules. The groups' ability to spell the pseudowords should depend on their phonological skills. Table 8.6 shows the breakdown of scores in each item type in both pre-test and post-test. An independent samples *t*-test was also run to compare the results of the two groups.

Table 8.6: Comparison of spelling items

Items			**experimental group**	**control group**	***t*(61)**	**Sig**
Regular words	Mean (%) *(S.D.)*	Pre-test	57.69 *(11.35)*	60.83 *(18.39)*	-.75	.46
		Post-test	43.33 *(18.40)*	47.50 *(22.89)*	-.80	.43
Irregular words	Mean (%) *(S.D.)*	Pre-test	55.38 *(19.85)*	52.08 *(21.46)*	.62	.54
		Post-test	45.38 *(12.53)*	48.33 *(14.94)*	-.84	.40
Pseudowords	Mean (%) *(S.D.)*	Pre-test	5.70 *(9.83)*	6.94 *(10.77)*	-.47	.64
		Post-test	8.26 *(15.23)*	6.94 *(14.95)*	.34	.74

Results of the *t*-test showed that the two groups did not differ in any item type. They performed in the same pattern before and after the training period. In both pre-test and post-test, the two groups had similar scores in regular words and irregular words, but their scores dropped drastically in pseudowords. This pattern suggested that the groups relied heavily on memorisation for spelling both the regular and irregular words. Their scores in these two types of items were similar. They were not

able to use phonological skills to spell more words in the regular spelling category. This pattern remained the same even after they had received the training, including the phonological training that the experimental group received. This speculation of their heavy reliance on memorization for spelling was further confirmed by their poor performance in spelling pseudowords, which they could not spell from memory. In these items, their scores were very low (below 10%). The two groups were not ready to use phonological skills to spell unfamiliar words and the training they received was not effective in helping them to do so. The fourth hypothesis which predicted the experimental group to have more improvement than the control group in the spelling task cannot be confirmed.

There was no significant difference between the pre- and post-test results of both groups. Scores in both regular and irregular words dropped, showing that the two types of items were treated in the same way. The most possible reason is that there were more unfamiliar words in the post-test than the pre-test. The students were not able to spell words that they had not learnt before. On the other hand, the pseudowords were unfamiliar words in all cases, and therefore, the scores in the pseudowords did not drop in the post-test. A paired samples *t*-test confirmed that there was no significant difference between the pre-test and post-test in this item category, $t(62) = -.80$, $p = .43$. The two groups did not show any difference in their performance

in the pre-test and post-test as all the pseudowords were unfamiliar words to them and their ability to spell these words was limited. The fact that there was no change in the performance in pseudowords implied that there was also no change in phonological skills. The students spelled words mainly by means of memorization. Hence, the decline of performance in regular and irregular words in the post-test could mean that there were more unknown words in the post-test than in the pre-test.

8.4 General Discussion

This training study aimed to identify the effect of phonological skills training on L2 decoding, reading and spelling at Secondary One level in Hong Kong. The study adopted the pre-test – training – post-test design and tested the effect by comparing results of the experimental group and the control group before and after the training. The experimental group received phonological skills training during the 12-week period, while alternative treatment in terms of speaking exercises was given to the control group during the same period. The training was conducted after school so that both groups received their normal English lessons as scheduled by the school. The hypotheses drawn from this study predicted the experimental group to improve more than the control group in phonological skills and such improvement would lead to improvements in decoding, reading and spelling according to the strong

relationships identified in previous research. But surprisingly, the experimental group did not outperform the control group in the post-test. In fact, the experimental group did not make any improvement in the rhyme judgment task. Although the post-test results of the phoneme deletion task showed significant improvement in both groups, their improvement was speculated to be caused by the differences in pre-test and post-test items or the practice effect with the instructions for the task. It seemed that there was no real improvement in the group in terms of phonological skills. The post hoc experiment of giving the pre- and post-test to a third group with only a one-week time gap between the two administrations indicated that this third group also did better in the post-test than the pre-test. This group's performance was also compared to the experimental group and the control group. No significant difference among the three groups was found. Result of this post hoc experiment suggests that the post-test may be easier than the pre-test. Both groups may not have made any real improvement in the phoneme deletion task.

The first hypothesis about improvement in phonological skills was not confirmed, and as all other hypotheses were built on this first hypothesis, they were not confirmed either. With reference to the strong relationship found between phonological skills and reading, it is not surprising that the experimental group did not make greater improvement in other literacy skills such as decoding, reading and

spelling. This pattern of results is indeed consistent with findings in previous L1 and L2 reading research which suggested that phonological skills represent a strong predictor of reading development. In this case, as there was no improvement in phonological skills, there was also no additional effect in their reading performance.

Although there was improvement found in reading comprehension, the improvement cannot be caused by improvement in phonological skills. As both groups improved in the same pattern, it was possible that the normal classroom input had helped the students improve their reading ability. However, the improvement in reading comprehension, though statistically significant, was in fact, quite small. The post-test score was less than 5% higher than the pre-test. The students, after one semester, improved very little in their reading performance. The small improvement implied slow development. These students will be disadvantaged by their slow reading development and the gap will become wider as they grow older and the problems will become more difficult to rectify.

The two groups also improved in the decoding tasks, but again the improvement might not be caused by improvement in phonological skills. It could be caused by their improvement in visual skills but this speculation cannot be verified in this study. In the dual-route access models of word recognition (Coltheart 1978; Coltheart et al. 1993), the visual route and the phonological route for word recognition

function differently with the former mainly used for reading familiar words or sight vocabulary while the latter will be useful for recognizing and memorizing words that are unfamiliar to the reader. Over-reliance on one route will weaken the reader's reading ability. For example, these readers will not be able to read or spell words they have not learnt before and without the aid of the phonological route, they may find it difficult to remember long words or distinguish words with similar spelling. They may be slow in building their vocabulary and this may affect their reading and writing development. The two groups' poor performance in spelling pseudowords and their lack of improvement in the post-test, as well as their slow development in reading, were indications of problems with visual decoding.

There are some possible reasons for the failure of the training programme. Firstly, age could be a critical factor in this case. This training study was carried out with older students. As many previous training studies (e.g. Bradley & Bryant 1983; Vellutino & Scanlon 1987) were conducted with young learners, there is very little information on the effect of phonological training on older or adult learners. It is not clear whether learners, especially L2 learners, beyond the early years of literacy development can improve their phonological skills. The age factor could be multi-faceted. It could be related to various aspects, such as cognitive, motivational, as well as L1 and/or L2 linguistic development of the learners. As the learners grow older,

their sensitivity to the value of phonemic elements within individual words may be reduced as more attention is paid onto the semantic and/or pragmatic value of words. It may become difficult for them to develop the awareness of the phonemic structure in English words and to learn the skills to manipulate the phonological features within the words. It may not just be the cognitive capability that limits their phonological development, but also their motivation in learning the phonological elements in words. There are some indications that learning the word-level skills such as letter-sound correspondence and the individual letters and rime patterns in words was monotonous and unexciting to them, especially when the mainstream classroom had put much emphasis on higher level skills with reading focused on sentence or text level. Students' motivation in the phonological training was low. For example, some of them found it embarrassing and they were therefore unwilling to read aloud the phonemes in words and to play some of the games. This might have affected the training outcomes. Moreover, the training was delivered after school. Students might be tired when attending the sessions or they might think that the sessions were unimportant, especially that the contents would not be included in the examination. These might all affect their motivation in learning too.

The Chinese students may be more inclined to use the visual approach for decoding because of the influence from the orthographic nature of their native

language. The more proficient they are in their L1, the higher the possibility that they will rely on visual skills for decoding. Once the habit has been formed, it may be difficult for them to change. Chinese children at the age of 13 should have developed a good level of L1 literacy skills, and they may have already formed a strong habit of using the visual cues to help them decode. Learning a new approach may be difficult for them. It will take time and effort for them to learn the new approach. Thus, apart from motivation, time may be another important factor. It is possible that the duration of the training was not long enough to achieve any significant effect. The students may need a longer programme to establish the skills for improvement and transfer effects to reading performance.

One of the intrinsic dilemmas in a pre-test – post-test study is whether or not to repeat the same test in the two testing procedures. The obvious advantage of using the same test is that it allows direct comparison of results without any possible variations related to test items. But the disadvantage is the results could be confounded by the possible practice effect that may develop when the students do the same tasks again. It will then be difficult to single out the effect of the training. The alternative is to use different but parallel tasks.

Nevertheless, it was difficult to find available tasks with parallel versions. The tasks in this study were either adapted from previous research or constructed with

specific principles. Although the items were constructed carefully to ensure their validity, there is always the possibility of variations among items and also in between administrations when given to different groups, unless the versions were tried out by a very large sample. Due to the time constraint (as the experiment had to start at the beginning of a school year, and the schools were closed during the summer holiday), the tests had not been piloted to a large sample in order to equate them statistically. Indeed, attempts to equalize the two versions may not always be successful. As Hatch & Lazaraton (1991) commented, "equating tests is another field of research in itself" (p. 532). Results in the comparisons showed that there are possible variations between the pre-test and post-test in some tasks, e.g. phoneme deletion, spelling, and word naming, creating limitations to comparison of results in the pre-test and post-test. In future studies of this kind, the repeated tests design might be considered for direct comparison of results.

Another limitation of this study is the scope of measurement in the design. The test battery used in this study included measurement of phonological skills, decoding skills, reading comprehension and spelling. The visual skills were not measured. Results in the post-test indicated that both groups had improvement in the decoding and reading tasks. But the groups did not improve in phonological skills, so the improvements in decoding and reading could not have been caused by improvement

in phonological skills. Moreover, the experimental group did not outperform the control group and there was no significant difference in the groups' results, therefore, it appeared that the phonological training did not contribute to the experimental group's improvement in decoding and reading more than the control group treatment would have. It was likely that the English lessons in the school curriculum had improved the students' decoding and reading, although the scale of improvement was quite small. But what had caused such improvements? It was beyond the scope of measurement in this study to identify other skills that could possibly contribute to decoding and reading. It was speculated that the students had improved in their visual skills which had led to their improvements in decoding and reading. However, this speculation was not verified in this study.

This is, in fact, another dilemma in the research design, especially for studies conducted in the school environment. On one hand, it would be ideal to maximize the scope of study to cover all possible explanations for knowledge enrichment, but on the other hand, there are restrictions for studies conducted in schools such that it is necessary to minimize the disturbance created to the school and the students' learning schedule. In this case, as the objective was to identify the effect of phonological skills training, it was decided that measurements would be limited to phonological skills and the related skills identified in prior research. But in future studies, when possible, it

will be more comprehensive to include measurements of other skills such as visual skills and L1 reading level.

The research questions put forward in Chapter 6 asked about the effect of phonological skills training on the L2 reading performance of learners in Hong Kong and the desirable level for such training. This training study attempted to answer these questions. Results indicated that phonological skills training may not be as effective for L2 learners as they are for L1 learners. But this study has brought out the possibility of an important factor for phonological training, that is, the age factor. Even for L1 learners, most of the training studies were conducted to young learners, and there is very little information on training for older or adult learners. Results in this study indicated that it may be difficult to develop or enhance the phonemic sensitivity of learners, especially L2 learners, when they have already developed their L1 and L2 literacy skills to a certain level. However, to confirm whether older or adult learners can be trained to improve their phonological skills, more training studies at this age level will be needed as this study is only an initiation of this kind.

Referring to the two research questions, if age is a critical factor for phonological training, then there is the possibility that the training will be effective with another age group. As most of the L1 training studies have been conducted with young learners, this may possibly be a more desirable level for phonological skills

training to take effect. The second training study reported in the next chapter was based on this first study but targeted young L2 learners with an attempt to address the same research questions as in this study.

9. Study III: Training study in phonological skills for Primary One students in Hong Kong

9.1 Objectives

The comparison study reported in Chapter 7 confirmed the relationship between phonological skills and reading achievement in L2 context, which is similar to the relationship found in L1 reading research. The findings represent an extension of reading research from L1 to L2 context. Based on this relationship, the pedagogical reference that can be drawn from L1 research is the effect of phonological training on reading achievement. As discussed in the literature review, training studies and longitudinal studies in the L1 context showed that improvement in phonological skills will lead to improvement in reading, it is thus important to know whether the same effects can be found among L2 readers. The research question raised in Chapter 6, "*What is the effect of phonological skills training in the L2 reading performance of Chinese ESL learners in Hong Kong?*" and the related question, "*What is the desirable level for phonological skills training for Chinese ESL learners in Hong Kong?*" are the focuses of the training studies reported in this thesis.

The phonological training study report in Chapter 8 was conducted at Secondary One level in Hong Kong, which is the same level as the Hong Kong group in the comparison study, as a direct intervention measure to tackle the deficiencies identified

in the comparison study. The results, however, showed that the training in phonological skills was not effective to students at this level. It is possible that learners beyond the early literacy stage find it difficult to develop their sensitivity to the phonemic elements in words and to change their decoding habits. It seems that age may be a critical factor for the success of phonological skills training. This conjecture, however, needs further support.

Further to the training study for older learners, the study reported in this chapter aims to investigate the effectiveness of phonological skills training on young ESL learners' reading development in Hong Kong at Primary One level (first year of formal schooling). The design of the study followed the previous study. The effect was tested in a pre-test – training – post-test control group design. The experimental group received phonological training while the control group received no such training. Both groups were measured on phonological skills, decoding skills, reading comprehension and spelling before and after the training period. By comparing the test results of the two groups and their developmental profiles, this study evaluates the effect of the training in terms of the improvement in the students' phonological skills and the contribution of such improvement to decoding skills, reading comprehension and spelling. Similar hypotheses were drawn.

Hypothesis 1

The experimental group that received regular training in phonological skills during the training period is expected to show significantly greater improvement in the tasks measuring phonological skills in the post-test than the control group who received no such training.

Hypothesis 2

It is expected that the experimental group who have developed better phonological skills after the intervention training will improve more than the control group in the decoding tasks in the post-test and they will rely more on phonological skills for decoding.

Hypothesis 3

As shown in previous research and the comparison study reported in Chapter 7, there is strong relationship between phonological skills and reading proficiency, it is therefore hypothesised that improvement in phonological skills will lead to improvement in reading comprehension such that the experimental group will improve more in the reading comprehension test than the control group.

Hypothesis 4

As for spelling, which requires students to recode single words from the phonological code to the visual code, it is expected that the experimental group will

improve more than the control group because of their better phonological skills.

9.2 Method

9.2.1 Participants

Unlike the previous study in which the training sessions were conducted after school, training in this study was integrated in the English lessons in order to avoid the motivation problems found in the last study and also to increase the practicality of the training to allow it for immediate classroom use if found effective. The training was delivered by the class teachers. The sample size was also increased. Instead of using one class, all the four classes at the same level in the school were involved. Two classes were assigned as the experimental group and the other two were the control group. There were altogether 118 Primary One students (57 boys, 48.31% and 61 girls, 51.69%) in the participating primary school, with ages ranging from 5.67 to 8.41 (mean age = 6.27) years. A one-way analysis of variance (ANOVA) was conducted to compare the ages of the groups. Results indicated that there was no significant difference in age among the four classes, F (3, 114) = .977, p>.05). There were 28 to 32 students in each class. Table 9.1 presents a summary of the gender and age distribution among the participants.

Table 9.1: Age and gender distribution

	Experimental group		Control Group	
	1B	**1D**	**1A**	**1C**
Male	15	14	15	13
Female	15	14	17	15
Mean age	6.28	6.30	6.16	6.34
Std Deviation	.55	.39	.41	.35
Max age	8.41	7.31	7.63	7.37
Min age	5.72	5.76	5.67	5.81

The school is located in a public housing estate in a suburban district in Hong Kong. According to the school, most of the students came from working class families and lived in the same housing estate as the school is in. All the participants were in their first year of formal schooling. Prior to this, they had spent 1-3 years in kindergarten. The duration depends on the parents' choice.

All the children are Chinese, with Cantonese as their mother tongue. All of them learned English as a second language in school. The curriculum was centrally prescribed by the Education Department in Hong Kong. Whole-class instruction was given. There were eight 35-minute English lessons per week (4.67hours). Teaching was based on a textbook and all the four classes used the same textbook and followed the same instructional schedule which was drawn up by the teachers at the beginning of the school year. The teaching syllabus adopted the target-oriented approach whereby learning targets were set in three dimensions, namely, Interpersonal Dimension, Knowledge Dimension, and Experience Dimension (Syllabus for Primary Schools, 1997). The learning objectives for achieving targets in each dimension were

listed in the Syllabus in terms of language forms and functions as well as skills and strategies. Little attention was paid to the orthographic knowledge or decoding skills at or beyond word level.

When the children first joined the school, they were randomly assigned to the four classes. According to the school, there was no streaming test administered. The four classes were taught by two teachers, each teaching two classes. One class from each teacher then was randomly assigned as the experimental group, so that the experimental group was comprised of two classes, each taught by a different teacher. The remaining two classes, one from each teacher, were treated as the control group, so that the control group was also comprised of students from both teachers. The classes were assigned on a random basis at the beginning of the school year. The teachers had not met the students when the groups were assigned. So in this case, Teacher A was teaching Classes 1A and 1B, whereas Teacher B was teaching Classes 1C and 1D. Each teacher was teaching half of the experimental group and half of the control group (as shown in Table 9.1). In this set up, it was expected that the teacher effect, which might be related to teaching style, personality, teaching experience, etc., would be minimised.

Both teachers were experienced teachers and had been teaching in the same school for at least 3 years prior to the study. Both were qualified primary school

teachers, teaching English as the major subject and possessed the qualification of Teacher's Certificate in Education. However, it was noted that one teacher was more experienced than the other. Teacher A had been a teacher for 26 years whereas as Teacher B had only 3 years' teaching experience. But the possible teacher effect due to the differences in teaching experience should be minimal as it has already been considered in the design of the study such that each half of the experimental group and the control group were taught by each teacher. Moreover, during the training period, the teaching was closely monitored by the researcher with class observations to each class of the experimental group in every week. There was no big discrepancy observed between the teachers in terms of the teaching contents and the procedures. Both teachers used the same textbook and the training materials and followed the same instructional schedule.

9.2.2 Procedures

The study was conducted in the first term of the school year. The four Primary One classes were pre-tested in the first week of the school term before teaching was started. The four classes were then post-tested in the last week of the school term, just before the term break. There were 20 weeks in the first term, including two weeks for examinations. Training started in the second week of the term and ended before the school examinations. The training period covered a total of 15 weeks.

Repeated-test design was used for the pre- and post-test procedures. The same set of test items were used in both the pre-test and the post-test. The use of the same test in the pre- and post-test procedures will enable direct comparison of pre- and post-test results and avoid the possible effects arising from the different levels of difficulty between two tests, which may distort the comparison. But on the other hand, the possibility of having memory effect on the post-test results in the repeated-test design needs to be considered. In this study, the focus was the between-group comparisons. It is important that the same testing procedures were administered to both the experimental group and the control group, so that the comparison will not be distorted. As the same test procedures were applied to both groups, the same effect, if any, would be developed in both groups, and in this case, the comparisons of results which were used to test the effect of the training would not be affected. Moreover, neither the pre-test results nor the answers were disclosed to the students, so the possibility of them remembering the answers was minimal.

9.2.3 Test instrument (please refer to Appendix 5)

The primary objective of the pre- and post-test procedures was to compare results between the experimental group and the control group in order to identify effects of the phonological training programme. The test batteries aimed at measuring phonological skills, decoding skills, reading comprehension and spelling. The tests

were administered in school. The group tests were held in classroom while the individual tests were held in a small quiet room. The same sequence of tests was used in pre-test and post-test. All the instructions were given in Cantonese. The details of the tasks are described below. Some of the tasks are taken from published tests while the others are constructed to measure the specific skills tested in this study.

1. Reading comprehension

The task was taken from PIAT-R Reading Comprehension sub-test (Markwardt 1998). The first 15 items were used. This represents the lowest level of the test. The original test was designed to be individually administered. Students were asked to read a sentence silently on one page and then match the meaning on one of the four pictures given on the back of the page. The same test items were adopted but the test was administered as a group test. It was felt that it would be more efficient to administer the task in class as this would reduce the time required for pre- and post-testing procedures and therefore minimised the disturbance to the school. Each student was given a booklet of 15 pages. The target sentence and the four pictures in each item were displayed on the same page. Students was given the instruction to put a tick on the picture which best illustrated the meaning of the sentence. This format of pen and paper matching task was familiar to the students as it is commonly used in games and exercises in kindergarten and primary school. The task was piloted as a

group test and the procedures were found feasible. The test was administered in class by the researcher and assisted by an assistant and the class teacher. Students were sitting in single rows.

The task measured student's understanding of what they read. Although this test was originally designed for testing L1 learners, it should also serve the same purpose for L2 learners. The PIAT-R Manual reported high levels of reliability coefficients clustered in the low to mid-.90s (Markwardt 1998: 59). The internal consistency of the items is high. It was concluded in the Manual that "the sub-tests represent clear, unambiguous content domains" (ibid, p.60). The coefficient alpha found in the pre-test and post-test in this study were .51 and .54 respectively. It seems that the reliability of the test is lower when used with L2 learners. It is possible that "data from beginner-level second language learners may be inconsistent" (Hatch & Lazaraton 1991: 531).

2. Phonological skills

There were 4 tasks used to measure phonological skills, namely, audio-discrimination, phoneme identification, phoneme deletion and phoneme substitution. The first two tasks aimed at measuring phonemic awareness. The third task measured segmentation skills. The fourth task added the complexity of blending skill. The first task was administered as a group task. All the other 3 tasks were

individually administered. The responses were scored immediately during the test. All the responses were audio recorded.

a. Audio discrimination

The task was taken from the first part of the PIAT-R Reading Recognition sub-test (Markwardt 1998). There were 10 items. The items measured audio discrimination skills of initial sounds in words. The original PIAT-R sub-test is individually administered. In this case, as this is basically an audio-visual matching task, instead of presenting the items on cardboard plates, the same items were put on Powerpoint slides and were shown on a projector in class. For the first two items, four pictures were presented in each item. The examiner read aloud the name of the four pictures and students were asked to identify the odd one with different initial sound from the other three. In the other eight items, a target picture was presented with four words as choices. The examiner read aloud the name of the picture and students needed to choose a word that started with the same initial sound, e.g. needle (in picture) – name (in writing). The choices in each item were numbered. Students were given an answer sheet where they wrote down the corresponding number of their choice for each item. There were two practice items. The split-half reliability coefficients reported in the Manual ranged from .93 to .98, across different levels. The internal consistency of the items was good. The coefficient alpha found in this study

was .73 and .64 in the pre-test and post-test respectively. Again, the reliability appeared to be lower when the tests were administered to L2 learners, but the resulting mid-range alphas can still be acceptable.

b. Phonemic identification

There were 12 items in this task. Students were asked to repeat the specified phoneme in a word they heard. For example, they have to say /p/ when they hear 'pig'. The first six items (items 1-6) required students to identify and repeat the last phoneme in each word they heard. There were two trial items and feedback was given to the responses. The other six items (items 7-12) required student to identify and repeat the first phoneme in each word they heard. There were also two trial items and feedback was given to the responses. It was found in the pilot test that students had difficulties understanding the task on identifying initial phonemes but found the task on final phonemes much easier to handle. Thus, in the pre- and post-tests, the six items on final phonemes were administered before the items on initial phonemes in order to help students understand the task. The words were read slowly twice to students but without stretching on individual phonemes. The coefficient alpha found in the pre-test and post-test were .86 and .82 respectively. The internal consistency of the items was good.

c. Phoneme deletion

There were 20 items in this task. The first set of 10 items required students to repeat the words they heard but without the final phoneme in the word. For example, they have to say 'pea' when they hear 'peak'. The second set of 10 items required students to repeat the word they heard but without the initial phoneme in the word (e.g. ball -> all). All the 20 items were single syllable words. There were 3 trial items for each set of items and feedback was given to the responses. Instructions were given in Cantonese. The words were read slowly twice to students but without stretching on individual phonemes. The reliability coefficients were good, alpha = .90 and .81 in pre-test and post-test respectively.

d. Phoneme substitution

There were 6 items in this task. Students were asked to repeat the words they heard but replace the initial phoneme in the word with /s/ (e.g. fun → sun). All the six items were single syllable words. There were two trial items and feedback was given to the responses. The words were read slowly twice to students but without stretching on individual phonemes. The coefficient alpha found in the pre-test and post-test were .49 and .90 respectively. The lower alpha in the pre-test can be attributed to the students' very low scores, M = 1.55%. Many students scored zero in the pre-test. But the alpha increased to a highly reliable level in the post-test.

3. Decoding skills

Two tasks were used to measure decoding skills. The first was an audio-visual matching task which measured students' ability to recognise the written form of single words based on their audio input. The second task was an oral reading task which required students to read aloud single words. The first task was administered in class whereas the second task was administered individually.

a. Audio-visual matching

This task was adopted from the PIAT-R Spelling sub-test. There were 30 items. In the original test, the examiner would read a word and students were asked to choose from among four choices the correct spelling of the word they heard. The original test was an individual test with the four choices presented on cardboard plates and children were asked to point to the answer. The same test items were adopted but the four choices for each item were numbered and presented on a Powerpoint slide. The slides were projected in class. Students were given an answer sheet and were asked to write down the corresponding number of the answer they chose. The target words were read aloud twice by the examiner. In the original test, a sentence with the target word in it is also read by the examiner to give context and meaning to the word. But in this study, the children were ESL young learners. Asking them to listen to the sentence would be a listening comprehension task to them, and thus would increase

the complexity of the task. To serve the same purpose of providing the meaning of the target word, the Chinese translation of the target word was given to ensure that students know the meaning of the target word. The split-half reliability coefficients reported in the Manual ranged from .86 to .96, across different levels. The coefficient alpha found in the pre-test and post-test in this study were .72 and .64 respectively.

b. Word naming

Students were given a list of 28 words and were asked to read aloud each word one by one. The task was administered individually. Students were encouraged to try all the words even though they might not know the meaning of them. The task was used to measure speech recoding ability based on visual input. The items were all single syllable words in their base form (with no prefix or suffix). The first 14 words were taken from the P.1 textbook (Dallas & Pelham 2000a). The list was reviewed by the teachers and they confirmed that it was at P.1 level. The students may not know many of the words at the beginning of the semester, but should have come across some of them by the end of the first term. These items measure students' ability to access the phonological code of familiar words. It is possible that some students knew more of the words on the list at the beginning of the school probably due to longer durations in kindergarten, but comparison of results mainly focused on their gains rather than just scores in the post-test. As Chinese ESL learners often rely heavily on

the visual code for decoding, it is common that they know the meaning of the word but cannot pronounce it because they do not remember the pronunciation. The students' performance on reading aloud these familiar words, especially in the post-test after they have learnt them in class, would indicate how far they can remember words by their pronunciation. The other 14 words were constructed by changing the initial consonant in the familiar words to form new words (e.g. can → tan, play → clay). These words were expected to be unfamiliar words. The ability to read these unfamiliar words which were derived from words they knew would indicate their use of phonological skills in terms of onset-rime segmentation, phoneme substitution, and applying grapheme-phoneme rules (for consonants only) in decoding new words. There were no trial items. Instructions were given in the mother tongue of the students. Students were told to point at the word when reading it (just to ensure that they followed the sequence) and were encouraged to try as many words as they could. The reliability coefficients of the task in pre- and post-tests were satisfactory, Alpha = .86 and .83 respectively.

4. Spelling

The spelling section of the Literacy Baseline subtest of the Reading Progress Tests (1996) was used to assess the spelling ability of the students. The test was recommended for children (mostly likely L1 children although not specified) during

the first term of their first year of compulsory schooling. The original test contained 9 sub-sections which measured different skills. Only the section on spelling was used. There were 7 items in the test. Students were asked to write down the words heard from the examiner. Each word was read twice to students. There was no practice item. The students' performance in the pre-test was very poor ($\underline{M}$ = .36%) which means that almost no one knows how to spell the words. Because there were less than 2 non-zero variance items, the coefficient alpha for reliability could not be computed. In the post-test, the coefficient alpha[1] was .64. Given that the number of items was small, the reliability of this task can be considered acceptable.

[1] Both split-half and coefficient alpha may be used to estimate the reliability of the total score if a scale has multiple items and the multiple items are summed to obtain a total score (Green, Salkind & Akey 2000).

Table 9.2: Summary of tasks

Task type	Task	Items	Venue	Skills measured
Reading comprehension	PIAT-R Reading Comprehension Sub-test	• 15 items	classroom	ability to understand simple sentences
Phonological skills	Audio discrimination – PIAT-R Reading Recognition sub-test	• 10 items	classroom	sensitivity to rhyme in spoken words
	Phoneme identification	• 12 items	individual	ability to identify and segment the specified phoneme in a word
	Phoneme deletion	• 20 items	individual	ability to identify, segment, and delete the specified phoneme from the rest of the given word
	phoneme substitution	• 6 items	individual	ability to identify, segment, delete, and substitute the specified phoneme in a word
Decoding	Audio-visual matching – PIAT-R Spelling Sub-test	• 30 items	classroom	ability to access the phonological code of a word through its visual cue
	word naming	• 28 items	individual	ability to recode from the visual representation of a word for its phonological representation
Spelling	Literacy Baseline sub-test - spelling section	• 7 items	classroom	ability to recode from a phonological code to a graphemic representation

9.2.4 Training programme

Training was conducted for around 45 minutes per week in the first term of an academic year for 15 teaching weeks by the two teachers responsible for the English lessons of each of the two classes in the experimental group. Training was started in

the second week of the school term immediately after the pre-test and ended in the last but one week before the end of the term and was immediately followed by the post-test.

Prior to the training programme, two three-hour seminars were held in the summer holiday for all the English teachers in the school to clarify the concepts and terminology on phonics, phonological skills and related teaching strategies. After the seminars, two teachers who were enthusiastic about the training experiment were identified and invited to conduct the training programme. Special arrangements were made with the school to assign the two teachers teaching the four classes in Primary One.

Training focused on phonemic awareness, letter-sound correspondences and intra-word analytical skills such as segmentation and blending. There were seven sections in the training programme, including :

two on the prerequisites for phonics instruction (Heilman, 1998):

i. visual discrimination of letters;
(worksheets on matching letter shapes, letter combinations, letter sequence, capital & small letters, word forms)

ii. auditory discrimination of sounds in words;
(worksheets on discriminating sounds at initial/final positions, vowels, rhymes)

three on initial consonants:

iii. initial consonants;
(chalkboard drill, matching pictures based auditory input, print and

sound with pictures, mental substitution, blank filling dictation)

iv. initial consonant clusters;
(identify blends in words, audio-visual matching based on words and pictures, audio-visual matching based on printed words, change a blend)

v. initial consonant digraphs;
(identify blends in words, audio-visual matching based on words and pictures, audio-visual matching based on printed words, change a blend)

two on rimes:

vi. rimes with short vowels (e.g. in-tin, at-cat, it-sit, en-hen, ox-fox, etc.);
(identify rimes with short vowels, look for words with the same rimes, blend different initial consonants with the same rime to form new words, change a blend)

vii. rimes with long vowels (e.g. ate-gate, ive-five, ane-lane, ook-book, old-cold, etc.).
(identify rimes with long vowels, look for words with the same rimes, blend different initial consonants with the same rime to form new words, change a blend)

In each section, there were 5-14 tasks. Each was presented as a lesson plan indicating the objectives, timing, materials and procedures. Worksheets or teaching aids such as picture cards or flash cards were attached wherever appropriate. There was a summary of tasks in front of each section for quick reference. Sample materials are included in Appendix 6.

To ensure treatment fidelity (Troia 1999), there was a briefing session for the two English teachers on the training materials before the training programme started. The materials were expected to be incorporated in the teaching syllabus and delivered in normal class hours. In this way, the experimental group would not have extra learning

time for the training programme. Both the experimental group and the control group had the same number of English lessons during the training period. There was no specific time-table for the training. Teachers were free to use the materials in any of the English lessons. The guidelines were that there should be a total of around 45 minutes in each week spent on the training materials. The teachers were requested to record on the summary sheet the date and duration for using each task. They were also invited to note down comments or student response to the tasks on the summary sheet. The two classes receiving the training were visited by the researcher for about 20 minutes every week in each class. The purpose of the visits was to monitor the training, observe the student development and give support and feedback to the teachers. After each visit, there was always a short discussion between the researcher and the teacher of that class on issues related to the training. There was no big discrepancy observed between the two teachers in terms of delivering the training materials.

Overall, the two teachers spent 685 minutes (11.41 hours) and 705 minutes (11.75 hours) respectively on the training materials during the 15 teaching weeks. On average, the teachers spent 45.67 minutes and 47 minutes per week respectively on the training. By the end of the first term, neither of the teachers could finish all the training materials. Both left out part of the last section on long vowel clusters, which

is about 15% of the training materials. But because of the arrangements with the school, the post-test had to be conducted at the end of the first term, as scheduled. There are potential effects on the fact that the training programme was not completed. The students' ability to recognise rimes may be lower than expected as the section on rimes with long vowels was not covered. The experimental group's performance on the decoding tasks and reading tasks may be affected. But as only 15% of the training materials were not covered, it was believed that the effect would not be very critical. These potential effects will be taken into consideration when analysing the results and will be discussed if identified.

9.3 Results and discussion

9.3.1 Overall results

The raw scores in the tasks were converted into percentages for easy comparison. Table 9.3 presents the scores in percentage obtained by the experimental group and the control group in the pre- and post-tests. Results of both groups in the pre-test were quite low. The average scores in all tests were below 50%. As the students were all young ESL learners and had received no prior formal schooling at the time when the pre-tests were administered, their low scores were not surprising. For the spelling task and the phoneme substitution task, the results indicated a floor effect for both groups

(M = 0 and .71 in the spelling task and M = 2.01 and 1.11 in the phoneme substitution task). However, the tasks were expected to be difficult for the students as they had not received any phonological training at the time of the pre-test but they were expected to show some improvement in the post-test. Table 9.3 listed the scores in percentage of the pre- and post-tests.

Table 9.3: Percentage scores of pre- and post-tests

Tasks		**experimental group**		**control group**	
		Pre-test	Post-test	Pre-test	Post-test
Reading Comprehension	Mean (%)	27.13	54.02	21.56	39.33
	(S.D.)	*(11.97)*	*(14.92)*	*(13.24)*	*(14.92)*
Phoneme Identification	Mean (%)	38.94	62.93	40.56	45.69
	(S.D.)	*(27.41)*	*(23.21)*	*(30.89)*	*(23.04)*
Phoneme Deletion	Mean (%)	35.34	65.69	42.75	56.33
	(S.D.)	*(24.42)*	*(19.11)*	*(23.24)*	*(13.27)*
Phoneme Substitution	Mean (%)	2.01	15.80	1.11	2.78
	(S.D.)	*(6.30)*	*(29.19)*	*(6.77)*	*(13.78)*
Audio Discrimination	Mean (%)	40.52	83.94	40.50	72.92
	(S.D.)	*(24.67)*	*(16.85)*	*(26.26)*	*(14.49)*
Audio-visual Matching	Mean (%)	39.71	62.24	42.72	55.94
	(S.D.)	*(13.51)*	*(11.59)*	*(15.82)*	*(10.54)*
Word naming	Mean (%)	11.21	30.36	11.55	28.15
	(S.D.)	*(11.90)*	*(14.87)*	*(13.94)*	*(12.29)*
Spelling	Mean (%)	0	20.94	.71	6.43
	(S.D.)	(.00)	(20.59)	(3.14)	(10.98)

9.3.2 Comparison of overall scores

A one-way analysis of variance (ANOVA) was conducted to compare the pre-test results of the experimental group and the control group. The dependent variables included all the tests administered in the pre-test procedures. Table 9.4

presents the results of the analysis. The between-groups comparisons of all the pre-test results except reading comprehension showed no significant difference between the two groups ($p < .05$ level), indicating that there was no difference between the experimental group and the control group in terms of their phonological skills, spelling and decoding skills measured by the tests at the time before the training. The difference in the reading comprehension results will be taken into consideration in the analysis of the post-test results.

Table 9.4: Results of a one-way analysis of variance on pre-test results

		Sum of Squares	Mean Square	F (1, 117)	Sig.
Reading Comprehension	Between Groups	915.26	915.26	5.74	.02
	Within Groups	18509.22	159.56		
	Total	19424.48			
Phoneme Identification	Between Groups	77.28	77.28	.09	.76
	Within Groups	99146.47	854.71		
	Total	99223.75			
Phoneme Deletion	Between Groups	1617.21	1617.21	2.85	.09
	Within Groups	65864.35	567.80		
	Total	67481.57			
Phoneme Substitution	Between Groups	23.91	23.91	.56	.46
	Within Groups	4969.03	42.84		
	Total	4992.94			
Audio-discrimination	Between Groups	.01	.01	.001	.10
	Within Groups	75369.48	649.74		
	Total	75369.49			
Audio-visual matching	Between Groups	267.12	267.12	1.23	.27
	Within Groups	25172.80	217.01		
	Total	25439.93			
Word naming	Between Groups	3.42	3.42	.02	.89
	Within Groups	19536.10	168.42		
	Total	19539.52			
Spelling	Between Groups	15.05	15.05	3.00	.09
	Within Groups	581.63	5.01		
	Total	596.68			

Another ANOVA was conducted to compare the results of the post-test tasks. The two groups performed differently in all tasks in the post-test. The differences were significant in all tasks but one. The difference found in the word naming task was not significant. The mean difference was 2.21, which was not big enough to reach the significance level. This issue will be taken into account in the following discussion. Details of the ANOVA results are listed in Table 9.5. The fact that the two groups had

no significant difference in the pre-test but came up with significant differences in the post-test suggested that the two groups had different developmental profiles in the four areas (reading comprehension, spelling, decoding skills and phonological skills) measured. Their developmental profiles are further analysed in the following sections.

Table 9.5: Results of a one-way analysis of variance on post-test results

		Sum of Squares	Mean Square	F(1,117)	Sig.
Reading Comprehension	Between Groups	6363.86	6363.86	28.60	.001
	Within Groups	25812.41	222.52		
	Total	32176.27			
Phoneme Identification	Between Groups	8761.93	8761.93	16.38	.001
	Within Groups	62036.68	534.80		
	Total	70798.61			
Phoneme Deletion	Between Groups	2581.71	2581.71	9.59	.001
	Within Groups	31215.75	269.10		
	Total	33797.458			
Phoneme Substitution	Between Groups	5004.65	5004.65	9.71	.001
	Within Groups	59771.71	515.27		
	Total	64776.37			
Audio-discrimination	Between Groups	3586.21	3586.21	14.56	.001
	Within Groups	28576.46	246.35		
	Total	32162.67			
Audio-visual matching	Between Groups	1169.38	1169.38	9.55	.001
	Within Groups	14210.66	122.51		
	Total	15380.04			
Word naming	Between Groups	143.05	143.05	.77	.38
	Within Groups	21513.82	185.46		
	Total	21656.87			
Spelling	Between Groups	6206.91	6206.91	23.02	.001
	Within Groups	31281.84	269.67		
	Total	37488.76			

9.3.3 Comparison of phonological skills

Four tasks were used to measure phonological skills, namely, audio-discrimination, phoneme identification, phoneme deletion, and phoneme substitution. The improvement of the two groups in these tasks during the training period was compared. As shown in Table 9.3, both the experimental group and the control group made improvements in all the phonological tasks. To compare the improvement of the two groups in these tasks, a one-way analysis of covariance (ANCOVA) was conducted to compare the post-test scores of each task between the two groups, with the pre-test scores as covariates. Results of the ANCOVAs are listed in Table 9.6.

Table 9.6: Results of ANCOVAs on post-test scores of phonological tasks

Tasks	**MSE**	**F (2, 115)**	**Sig.**	**Partial Eta Square**
Audio-discrimination	3583.66	16.69	.001	.13
Phoneme identification	9361.14	21.96	.001	.16
Phoneme deletion	3613.87	16.33	.001	.12
Phoneme substitution	4075.54	9.32	.001	.08

In all the four tasks, the Between-Subjects Effects were significant, indicating that the post-test scores of the two groups were significantly different, even after taking into account the pre-test scores. The effect size indexes, partial η^2, ranged from .08 to .16, all indicating a medium to strong relationship (Green, Salkind, Akey, 2000) between the variance in the post-test scores and the phonological skills training

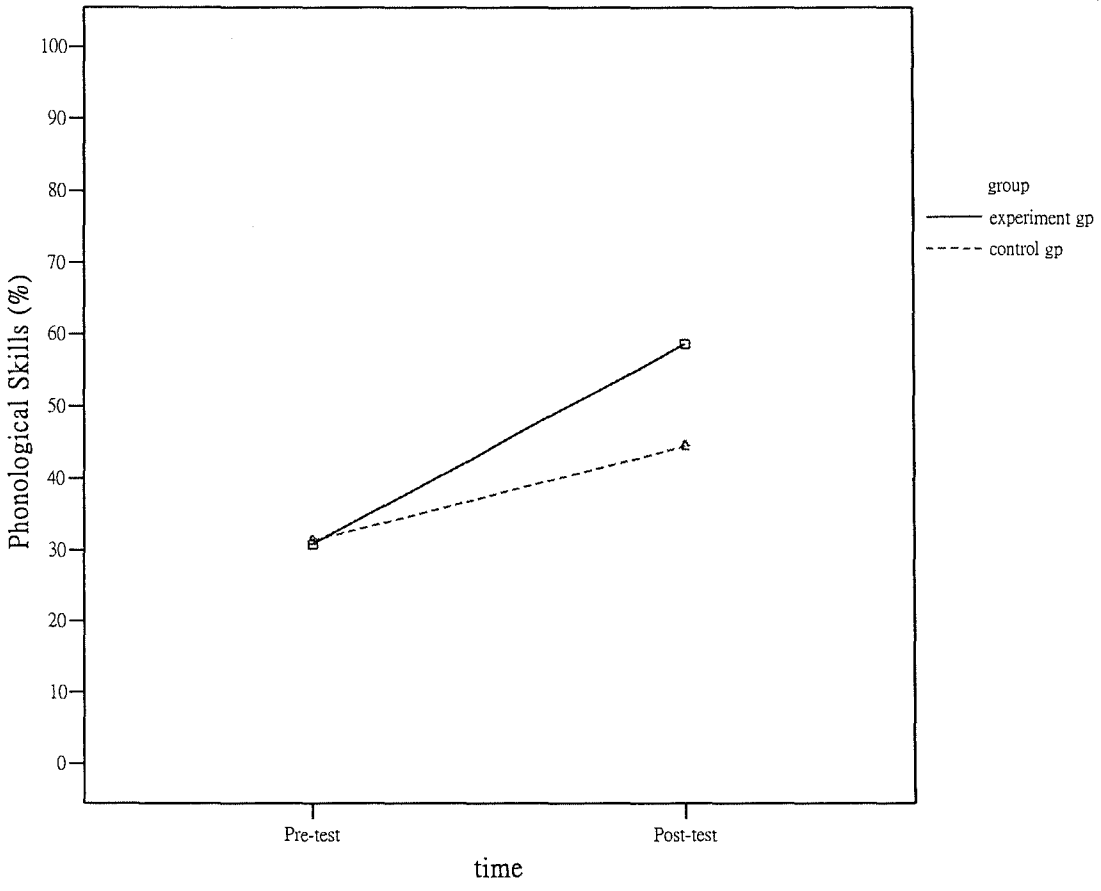
received, after controlling for the pre-test scores. As shown in Table 9.3, the post-test scores of the experimental group were all higher than the control group, the results of the ANCOVAs thus confirmed that the experimental group had made greater improvement in each of the four phonological tasks than the control group.

As described in the test instruments section, both phonological skills and decoding skills were measured by multiple tasks. The multi-tasks design of the test instruments allowed the measurement to be more comprehensive, and thus more reliable. To test the first hypothesis drawn at the beginning of this chapter, which predicted that the experiment group would make significantly more improvement in phonological skills than the control group, scores of the four phonological tasks were combined and then averaged to form a single representative score of phonological skills. Since the raw scores in each task had already been converted into percentages, and each of the components being equal in importance to the others, the combination of the percentage scores should not distort the comparison. The single representative score also allow further correlational analyses between phonological skills, decoding, reading and spelling. The reliability coefficients of the combined phonological skills results in the pre-test and post-test were .55 and .78 respectively. The reliability of the combined scores in the pre-test was lower mainly because of the apparent floor effect in the phoneme substitution task in the pre-test. As the students' performance

improved in the post-test, the reliability also increased.

A Mixed model analysis of variance (ANOVA) was conducted with the factor being the two groups with and without phonological skills training and the dependent variable being the phonological skills scores in the pre-test and post-test. The ANOVA found that the main effect of time, was statistically significant, $\underline{F}$ (1, 113) = 286.57, $\underline{MSE}$ = 24099.39, $\underline{p}$< .01, partial η^2 = .72. The results indicated that both the experimental group and the control group improved in their phonological skills over time. The effect size is very strong. The main effect of group was also significant, $\underline{F}$ (1,113) = 8.37, $\underline{MSE}$ = 2698.21, $\underline{p}$= .01, partial η^2 = .07. The time x Group interaction effect was also statistically significant, $\underline{F}$ (1, 113) = 36.27, $\underline{MSE}$ = 3050.35, $\underline{p}$< .01, partial η^2 = .24, indicating that the experimental group had made significantly greater improvement in phonological skills over time than the control group. Fig.9.1 illustrates the phonological skills x group interaction effect. The results confirmed Hypothesis 1 that the experimental group, who received regular training in phonological skills during the period, showed greater improvement in phonological skills in the post-test than the control group.

Fig. 9.1: Group comparison of development in phonological skills



As Fig. 9.1 shows, both the experimental group and the control group improved in phonological skills over time, but the experimental group made significantly greater improvement than the control group. The results suggested that phonological skills can be developed with implicit instruction, but the rate of development is much lower than that developed with explicit instruction. Given that the two groups started with no significant difference, and that both received the same kind of English lessons, with the same textbook and teaching schedule, the better performance of the experimental group can be attributed to the effect of the explicit training. In other words, explicit training in phonological skills is more effective in improving

phonological skills. The first hypothesis which predicts bigger gains in phonological skills among the experimental group than the control group in the post-test is therefore confirmed.

9.3.4 Comparison of decoding skills

Two tasks were used to measure decoding skills, namely, audio-visual matching and word naming. The first task measures students' ability to recognise written words based on their audio input. The second task measures students' ability to articulate the phonological code of given words based on their written code. To compare the improvement of the two groups in these tasks, a one-way analysis of covariance (ANCOVA) was conducted to compare the post-test scores in these two tasks, with the pre-test scores as covariates. Results of the ANCOVAs are listed in Table 9.7.

Table 9.7: Results of ANCOVAs on post-test scores of decoding tasks

Tasks	**MSE**	**F (2, 115)**	**Sig.**	**Partial Eta Square**
Audio-visual matching	1487.87	13.99	.001	.11
Word naming	178.49	1.99	.16	.02

There was a significant difference found in the post-test scores of the audio-visual matching task between the two groups, after controlling for the pre-test scores. The experimental group performed significantly better than the control group, even though there was no significant difference between the two groups in the pre-test. Again, both groups made some improvements in the post-test, suggesting the decoding skills in terms of word recognition based on phonological input can be

developed by both implicit and explicit instruction, but the latter was shown to be more effective.

In the word naming task, the two groups showed no significant difference in their performance in the post-test. Although both groups improved and the experimental group seemed to improve more than the control group, the mean difference was not big enough to reach the significance level. As we can recall in the task design, some words used in the first 14 items (Items 1-14) were taken from the P.1 textbook. It is possible that both the two groups learnt to read those words from the textbook. For those words they did not learn, neither group was able to read them. But in the last 14 items (Items 15-28), the words were constructed by changing the initial consonant in the first 14 items to form new words (e.g. can → tan, play → clay). The ability to read these unfamiliar words which were derived from words they know would indicate their use of phonological skills in terms of onset-rime segmentation, phoneme substitution, and applying grapheme-phoneme rules (for consonants only) in decoding new words. The two sets of items were then analysed separately. Two separate ANCOVAs were conducted for the post-test scores of the two sets of items, with the pre-test scores as covariates. Results of the two ANCOVAs are listed in Table 9.8.

Table 9.8: Results of ANCOVAs on post-test scores of items in Word Naming

Items in Word Naming Task	MSE	F (2, 115)	Sig.	Partial Eta Square
Items 1-14 (familiar words)	2.44	.05	.82	.00
Items 15-28 (unfamiliar words)	137.66	5.92	.02	.05

It can be seen from Table 9.8 that the two groups had no significance difference in naming familiar words in the post-test. But when it comes to unfamiliar words, the mean score of the experimental groups was significantly higher than the control group (M = 7.27 & M = 5.24 respectively). Although the effect size was still small, it is an indication that the experimental group were more able to use their phonological skills, especially onset-rime analogy, to sound out unfamiliar words. This is a similar skill used by L1 speakers to read aloud pseudowords.

In order to test the second hypothesis which predicted that the experimental group would develop better decoding skills than the control group in the post-test, results of the two decoding tasks were combined and averaged to form a single score to represent decoding skills. The reliability coefficients of the combined scores were satisfactory (alpha = .66 in the pre-test and alpha = .72 in the post-test). A Mixed model ANOVA was run to compare the developmental profiles of the decoding skills of the two groups. Results of the analysis found that the main effect of time was statistically significant, F (1, 116) = 464.87, MSE = 18850.41, $p < .01$, partial η^2 = .80, showing that both groups improved in decoding skills over time. The effect size is

very strong. The main effect of group was not significant, $F(1, 116) = .44$, MSE = 97.74, $p = .51$, suggesting that the group difference was not big enough. However, the analysis found the interaction of time x group significant, $F(1, 116) = 12.77$, MSE = 517.63, $p < .01$, partial $\eta^2 = .10$, indicating that the two groups improved at different rates. As the main effect of group was not significant and the effect size of the time x group interaction was small, a further analysis of using ANCOVA to compare the post-test results of the two groups controlling for the pre-test results as covariates was conducted. Results indicated significant group effect, $F(2, 115) = 13.26$, MSE = 829.01, $p < .01$, partial $\eta^2 = .10$, was found. The results supported the difference in the improvement rates between the two groups in decoding.

Results of the ANOVA and the ANCOVA confirmed the second hypothesis that the experimental group made more improvement in decoding skills as a whole than the control group. As the experimental group had received phonological skills training and they showed higher gains in both the phonological and decoding tasks in the post-test, it is necessary to further evaluate the relationship between phonological skills and decoding skills in order to assess the effectiveness of the training. Two bivariate linear regression analyses were conducted separately for the experimental group and the control group, examining the extent to which phonological skills predict decoding skills. The correlational indices resulted from the separate analysis were

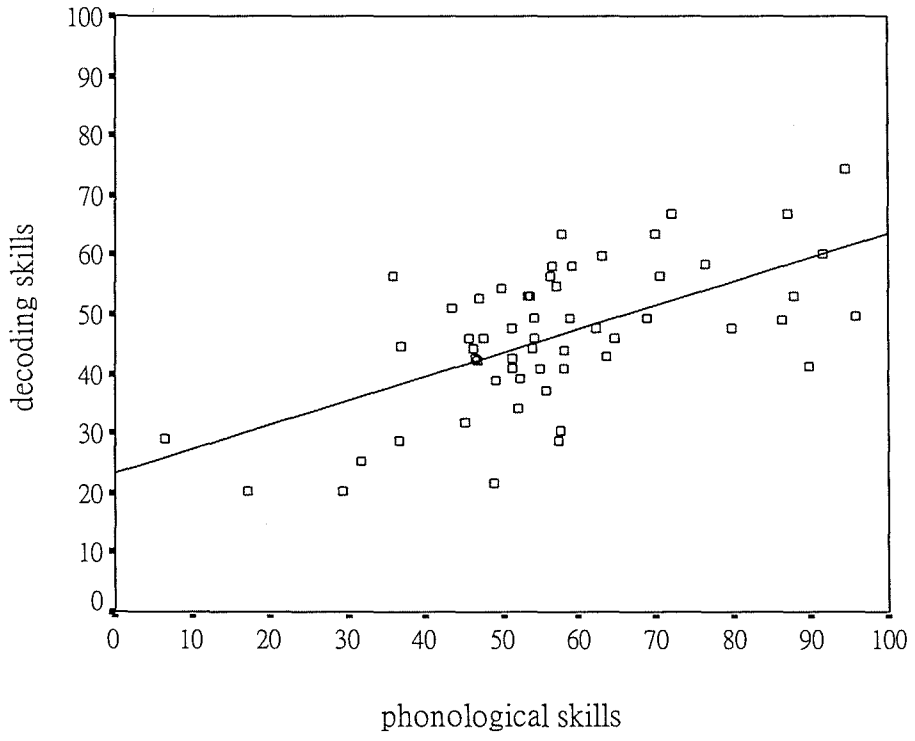
compared in order to examine the different predictive strength of phonological skills on decoding skills between the two groups. Results of the analyses are reported in Table 9.9.

Table 9.9: Results of linear regression analyses on phonological skills and decoding

Group	r	r^2	t	Sig.
Experimental Group	.65	.37	5.68	.001
Control Group	.50	.25	4.38	.001

Results of the analyses showed that significant linear relationship between phonological skills and decoding skills were found among both the experimental group and the control group, such that as phonological skills improve, decoding skills also improve. But the predictive power found in the experimental group was larger than that in the control group. Among the experimental group, phonological skills accounted for 37% (r^2 = .37) of the variance of decoding skills. The effect size was smaller among the control group (r^2 = .25). The results indicates that as the experimental group had been equipped with better phonological skills, they relied more on such skills for decoding, which in turn showed to be more efficient, thus also confirmed the second part of Hypothesis 2 that the experimental group relied more on phonological skills for decoding. The linear relationship is shown in the Figure 9.2.

Fig. 9.2: Relationship between phonological skills and decoding within experimental group

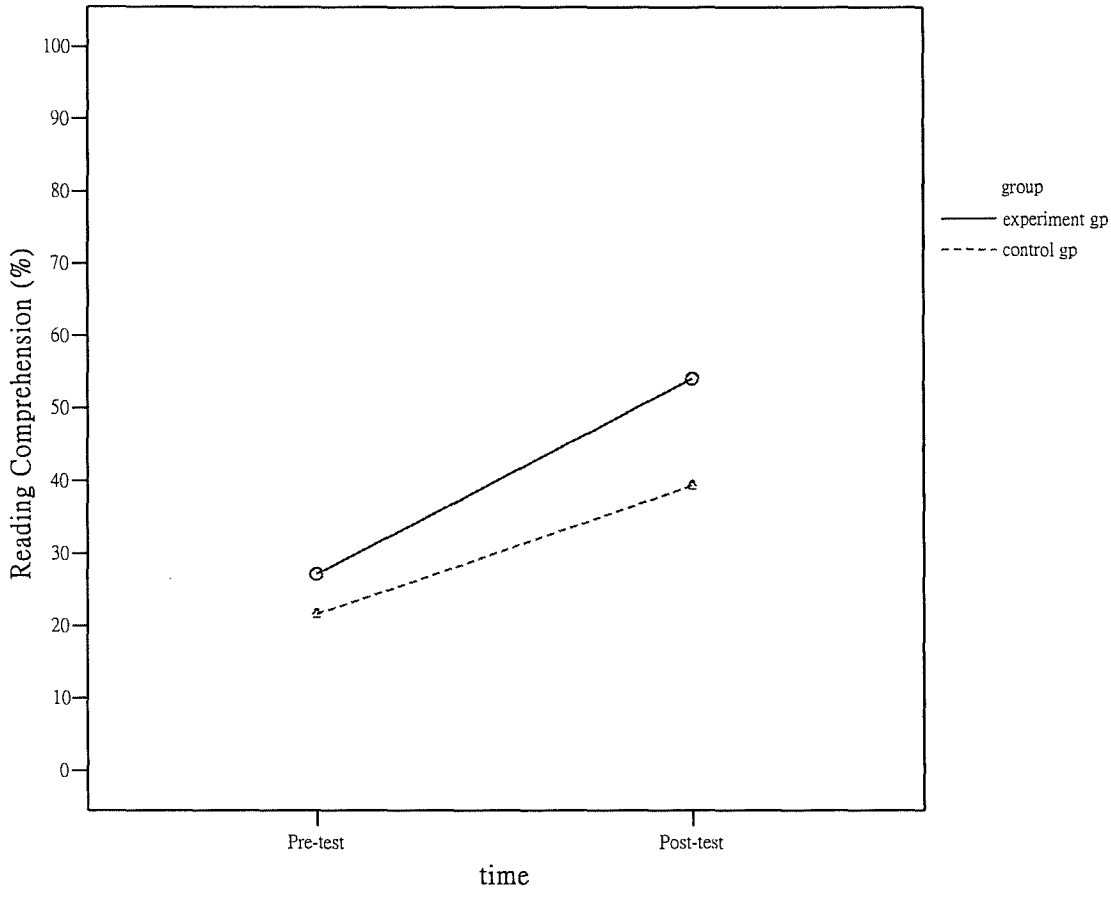


9.3.5 Comparison of Reading comprehension

The third hypothesis drawn on this research expected that the experimental group would have more gains in reading comprehension than the control group after the training period. To test this hypothesis, a Mixed model ANOVA was conducted to compare the development of reading comprehension between the two groups over the training period, with the dependent variable being the reading comprehension scores in the pre-test and post-test. Results of the Mixed model ANOVA found a significant time effect, $\underline{F}(1, 116) = 208.37$, $\underline{MSE} = 29429.53$, $\underline{p} < .01$, partial $\eta^2 = .64$, showing that both groups improved in reading comprehension over the training period. The effect size is strong. The time x group interaction effect was also statistically

significant, F(1, 116) = 8.68, MSE = 1126.14, p< .01, partial η2 = .07. The experimental group improved significantly more than the control group in reading comprehension after receiving the phonological skills training. The main effect of group was also significant, F(1, 116) = 25.13, MSE = 6052.98, p< .01, partial η2 =.18. Figure 9.3 illustrates the developmental profiles of the two groups on reading comprehension.

Fig. 9.3: Group comparison of development in reading comprehension



But as shown in Table 9.4, the pre-test results of the two groups on reading comprehension was significantly different, therefore another ANCOVA was conducted to compare the two groups' post-test results, using their pre-test results as

covariates. Results showed that the group differences in the post-test were significant, even after controlling for the pre-test results, $F(2, 115) = 22.58$, $MSE = 4713.38$, $p < .01$, partial $\eta^2 = .16$.

To further evaluate the effectiveness of the training, we need to examine how far the improvement in reading comprehension can be attributed to improvement in phonological skills. The predictive power of phonological skills on reading comprehension among the two groups was compared. Two bivariate linear regression analyses were conducted separately for the experimental group and the control group. Results of the analyses are reported in Table 9.10.

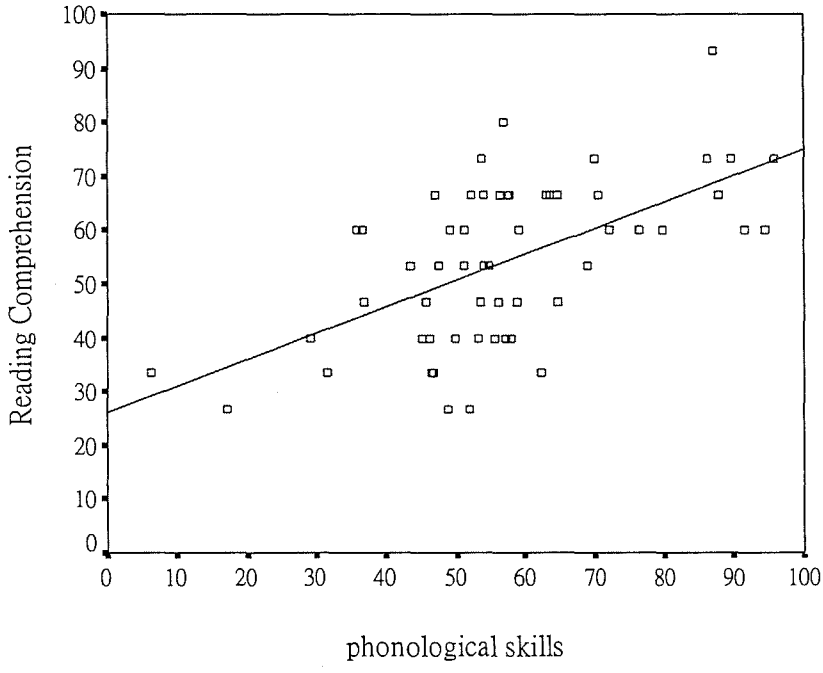
Table 9.10: Results of linear regression analyses on phonological skills and reading comprehension

Group	r	r^2	t	Sig.
Experimental Group	.58	.34	5.36	.001
Control Group	.41	.17	3.42	.001

For both groups, correlations between phonological skills and reading comprehension are significant and positive, suggesting that as phonological skills improve, reading comprehension also improves. However, the predictive power found among the experimental group was stronger than that among the control group. Among the experimental group, phonological skills account for 34% ($r^2 = .34$) of the variance of reading comprehension, whereas the effect size among the control group was smaller ($r^2 = .17$). Results of the Mixed model ANOVA, together with the linear

regression analysis, confirmed the third hypothesis that the experimental group improved more than the control group in reading comprehension over the training period, and phonological skills was a strong predictor of the reading comprehension such that improvement in phonological skills leads to improvement in reading comprehension. The relationship between phonological skills and reading comprehension among the experimental group in the post-test is displayed in Figure 9.4.

Fig. 9.4: Relationship between phonological skills and reading comprehension within experimental group

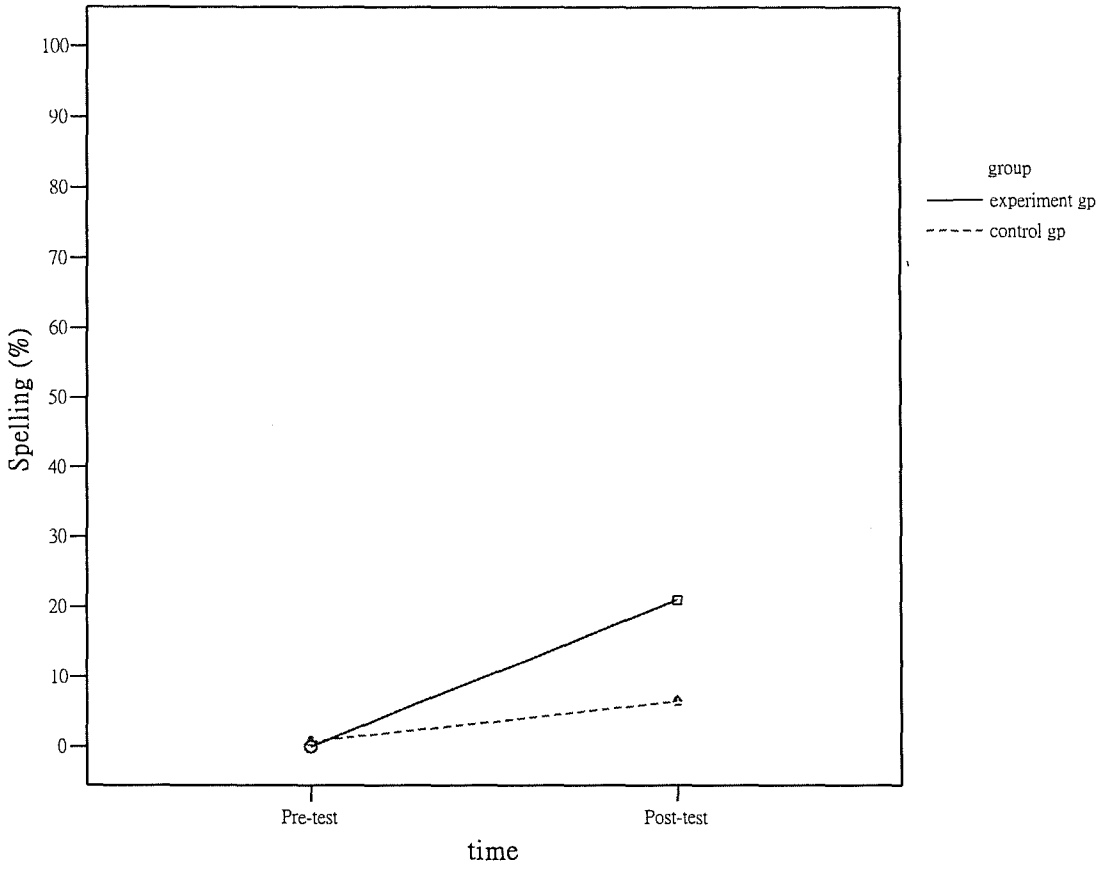


9.3.6 Comparison of Spelling

This study aims to identify the effects on phonological skills training in reading performance at Primary One level. As the training programme was focused on

letter-sound correspondences and intra-word analytical skills, it is believed that apart from decoding and reading comprehension, the programme will also help to improve students' spelling. The fourth hypothesis expected the experimental group to have more improvement in the spelling task than the control group over the training period. The improvement in spelling should be attributed to improvement in phonological skills. To test this hypothesis, a Mixed model ANOVA was conducted to compare the pre-test and post-test scores of the experimental group and the control group in the spelling task. Results of the Mixed model ANOVA found that the main effect of time was significant, $\underline{F}(1, 116) = 78.94$, $\underline{MSE} = 10472.97$, $\underline{p} < .01$, partial $\eta^2 = .41$. The time effect indicated that both groups improved during the training period. The main effect of group was also significant, $\underline{F}(1, 116) = 19.76$, $\underline{MSE} = 2805.38$, $\underline{p} < .01$, partial $\eta^2 = .15$. The time x group interaction was significant, $\underline{F}(1, 116) = 25.75$, $\underline{MSE} = 3416.58$, $\underline{p} < .01$, partial $\eta^2 = .18$, showing that the experimental group improved more than the control group. The developmental profiles of the two groups are illustrated in Figure 9.5.

Fig. 9.5: Group comparison of development in spelling



The second part of the hypothesis predicts a stronger relationship between phonological skills and spelling among the experimental group such that their improvement in phonological skills will lead to their improvement in spelling. To evaluate the relationships, two bivariate linear regression analyses were conducted separately on the experimental group and the control group to evaluate the relationship between phonological skills and spelling in the post-test among each group. Results of the regression analyses are listed in Table 9.11.

Table 9.11: Results of linear regression analyses on phonological skills and spelling

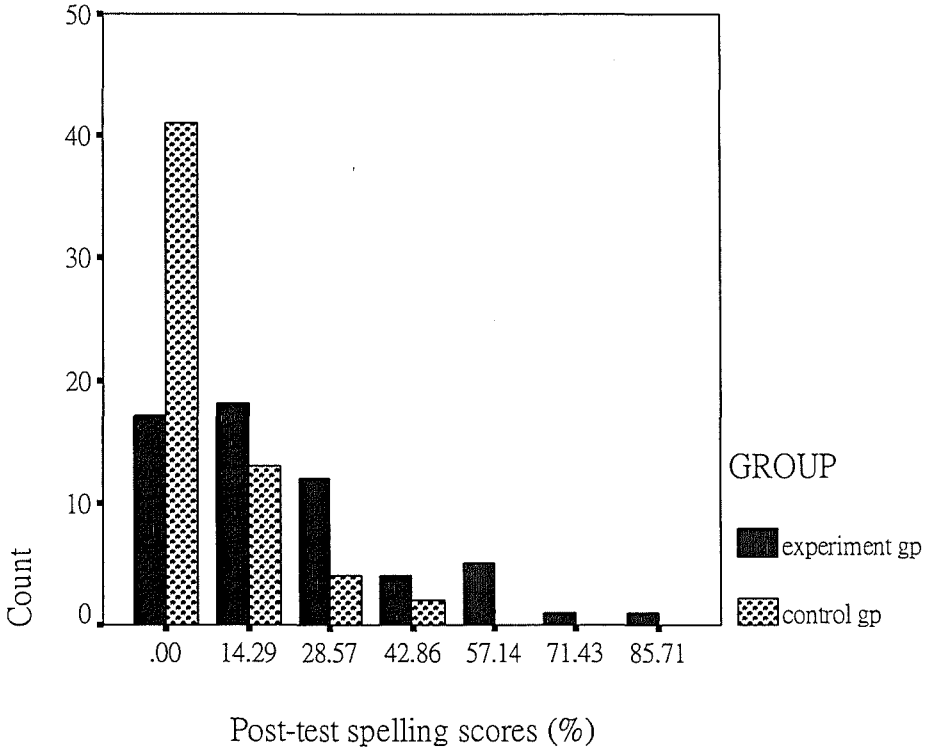
Group	r	r^2	t	Sig.
Experimental Group	.35	.12	2.77	.01
Control Group	.44	.20	3.78	.00

In both the experimental group and the control group, a significant linear relationship was found between phonological skills and spelling, which suggests that if the students' phonological skills improve, their spelling will also improve. Phonological skill, as a whole, is a significant predictor of spelling. However, the analyses did not find a stronger effect among the experimental group. The correlation found in the control group (r = .44) was slightly stronger than that found in the experimental group (r = .35).

Both groups scored almost zero in the pre-test, showing that (i) they did not know any of those seven words (the written form) and (ii) they had no idea in using the grapheme-phoneme rules for spelling. Given the near zero scores found in the pre-test in the spelling task, the frequency distribution of scores in the post-test would indicate the range of the students' improvement. After checking with the teachers, it was confirmed that the seven target words in the spelling task were still unfamiliar to the both groups even at the time of the post-test, and they probably had not come across those words before. The bar chart in Fig. 9.6 shows the frequency distribution of the post-test scores of the spelling task. Only 32% of the control group scored

above 0 and the maximum score was only 42.86. A large proportion of students in the group did not make any improvement in spelling. On the other hand, the improvement in the experimental group is clearer, with 70% of students in the group scoring above 0. The different patterns of frequency distribution between the two groups suggest that their improvement rates were different, although statistical analysis does not support the hypothesis that the experimental groups' improvement in spelling was highly related to their phonological skills. In the experimental group, phonological skills explained 12% (r^2 = .12) of variance in spelling. The correlations found in both groups were not high. It seems that both groups relied on other skills than phonological skills for spelling. It is possible that spelling, which is a productive skill, involves more than phonological skills. Other skills, such as memory, visual skills, might contribute to its development.

Fig. 9.6: Frequency distribution of post-test scores in spelling



The above analyses supported the fourth hypothesis that the experimental group made more improvement than the control group in spelling over the training period. However, the effect size of phonological skills being a major predictor of spelling was not strong. Only medium correlation indices were found in both groups. Although the linear correlations were statistically significant, the effect of phonological skills being a strong predictor of spelling is not clear, especially in the control group as there was little improvement made by the group in spelling and phonological skills over the training period, therefore the contribution of phonological skills to the improvement in spelling is not clear in this group. The experimental group made more improvement in spelling than the control group, but phonological skills only accounted for 12 % of

the variance in spelling, suggesting that the experimental group relied on other skills for spelling.

9.4 General Discussion

This study set out to evaluate the effectiveness of phonological skills training on improving the L2 reading performance of Chinese ESL learners in Hong Kong. The study was conducted at Primary One level in Hong Kong, which is the first year of formal school. The effect was tested in a pre-test and post-test control group design, with a training period of 15 weeks in between. The training experiment was conducted in a classroom situation where the training was incorporated into the teaching curriculum. The experimental group and the control group were randomly assigned and had no significant difference in all the tasks tested at the time when the research started. Their teaching curriculum covered the same topics in the textbook, and the two groups received the same amount of L2 exposure in the classroom. In this way, the possible Hawthorne effect (Troia 1999) in terms of teaching time would be minimized, although it may not be totally eliminated because it has to be noted that the experimental group had received some new input, which was phonological skills training, whereas the control had done more of the existing curriculum But unless the experimental group knew this, there would not be a possible Hawthorne effect. It is

not possible that the improvements shown by the experimental group were caused by any extra input in terms of contact hours they received in the experiment. The differences in the input in fact allowed the comparison between direct instruction in the form of phonological skills training and the whole word approach. The two class teachers taught half of the experimental group and half of the control group each, so that the possible teacher effect would be counterbalanced. The teachers were requested to keep records on their teaching profile and they were visited by the researcher every week. The visits functioned as "manipulation checks" (Troia 1999) which were used to monitor and ensure treatment fidelity.

Results of the experimental group and the control group in pre-test and post-test were compared. Both within-subjects effects and between-groups contrasts were tested. The analyses of results addressed four hypotheses. The first was to confirm the direct effect of the training, that is, the group who received training in phonological skills would show greater improvement in such skills than the control group over time. Four tasks were used to measure phonological skills, namely, audio-discrimination, phoneme identification, phoneme deletion, and phoneme substitution. Results of the post-test showed that the experimental group made greater improvements than the control group in all the four tasks. The direct effect of the training programme was confirmed. The results implied that explicit instruction was more effective than the

implicit approach for improving phonological skills. This implication is particularly important for ESL learners as their exposure to the second language is often limited. They need direct instruction for developing their phonological skills.

The second hypothesis predicted the positive correlation between phonological skills and decoding skills such that stronger phonological skills will lead to better decoding skills. Decoding skills were measured by two tasks, audio-visual matching and word naming. Post-test results showed that the experimental group made more gains in the audio-visual matching task but not the word naming task. Although the experimental group scored higher in the latter task, the difference between the two groups in the post-test was not big enough to be statistically significant. But when the familiar and unfamiliar words used in the task were analysed separately, it was found that the experimental groups scored significantly higher than the control group in reading aloud the unfamiliar words, after controlling for the scores in the pre-test. On the whole, when taking the decoding tasks together, the experimental groups improved more than the control group. Regression analysis further confirmed the strong predictive power of phonological skills on decoding skills. The effect size was stronger in the experimental group than the control group. The second hypothesis was thus confirmed. The strong correlation found between phonological skills and decoding confirmed the value of developing phonological skills. Good phonological

skills will lead to good decoding skills, and thus, direct instruction in phonological skills should be encouraged.

The third hypothesis was similar to the second one, except that the focus was the effect of phonological skills on reading comprehension. Results showed that both groups improved in reading comprehension but the improvement made by the experimental group was significantly larger than the control group. The experimental group had not only improved more, but also faster than the control group. The regression analysis further confirmed that the bigger gains of the experimental group in reading comprehension were highly related to the groups' better phonological skills. The predictive power of phonological skills on reading comprehension was higher among the experimental group than the control group. The third hypothesis was also confirmed. The correlations found here further confirmed the positive effect of phonological skills on reading not only at word level, but also at text level. Thus the importance of developing phonological skills is reinforced.

The fourth hypothesis focused on the effect of phonological skills on spelling. The students were very poor in spelling at the beginning of the school term when the pre-test was conducted. The mean scores of both groups were almost zero. But in the post-test, the score of the experimental group was significantly higher than the control group. This showed that the experimental group had made more improvement than the

control group. However, results of the regression analysis did not find a stronger effect of phonological skills as a predictor of spelling among the experimental group. The effect size, though significant, was not strong, which indicated that spelling involves skills other than phonological skills. Further investigations will be needed for identifying the other influential skills on the development of spelling. The hypothesis on the higher gains of the experimental group than the control group in spelling was confirmed but it was not clear about the relationship between phonological skills and spelling.

Results of the post-test tasks measuring phonological skills confirmed the direct effect of the phonological skills training. Having the L2 exposure controlled, the experimental group showed more improvement in phonological skills than the control group. The bigger gains can be attributed to the training programme. Results of other tasks measuring decoding, reading comprehension, and spelling also showed superior performance of the experimental group. Again, having all the background variations controlled, the differences of the two groups could be attributed to the training effect which was realised as improvement in phonological skills. Results of the regression analyses showed phonological skills as an important predicting factor on the tasks measuring decoding and reading comprehension. This training study thus adds evidence to the causal link between phonological skills and reading development, not

only in L1 context as discussed in the literature, but also in the L2 learning process.

The correlations further prove the value of phonological skills in reading development. Stronger correlations were found between phonological skills and decoding and also reading comprehension in the experimental group than the control group. The difference in correlation patterns between the two groups indicated the different levels of reliance on phonological skills for reading. The experimental group had not only developed better phonological skills but also relied more on such skills for decoding and reading. The control group, with weaker phonological skills, had to rely on other skills for decoding and reading. Yet the higher results of the experimental group in decoding and reading suggest that phonological skills are effective and efficient for reading in English. This is consistent with the sound-based nature of the English orthography, and confirmed the importance of phonological skills in learning to read English.

Both groups did improve in phonological skills over time, although the two groups improved at different rates. The fact that the control group also improved in phonological skills over time suggests that phonological skills could also be developed incidentally with various other types of L2 input without direct instruction in such skills. But the rate of phonological skills development in this way was slow as shown by the control group's small gains between the pre- and post-tests. Moreover, it

is possible that some students never develop such skills to a practically acceptable level without explicit instruction. When compared to the group which had received direct instruction over the same period of time, the control group lagged far behind. Not only were they slow in developing phonological skills, they also improved less in decoding, reading comprehension and spelling. Their slow development in reading ability suggests that their under-developed phonological skills could be a hindering factor. Previous L2 reading research on Chinese adult learners (e.g. Haynes 1990, Holm & Dodd 1996, Huang & Hanley 1993, Rickard-Liow & Poon 1998) indicates that without explicit and systematic instruction, phonological skills grow very slowly. The training experiment in this research together with the comparison study reported in Chapter 7 demonstrated the possibility and the necessity of improving phonological skills by direct instruction which could in turn lead to improvement in reading ability. Results of this study showed that direct instruction is more effective than other types of L2 input in improving phonological skills.

The effectiveness of direct instruction on phonological skills also brings to reconsideration of curriculum design such that phonics instruction should be included in classroom instruction. In this study, instructions on phonological skills were incorporated into day-to-day classroom teaching, and this approach was found to be effective. Results of the repeat-measures ANOVA on the word naming task found no

significant interaction effect between test and group, indicating that there was no significant difference in the improvement rate between the two groups. Further examinations on the groups' performance in the two types of items, namely familiar and unfamiliar words, showed that the experimental groups made more improvement in reading aloud unfamiliar words than the control group. Though significant, the effect size was small. This could be an indication that the training was not long enough to produce clearer effects in this aspect. In this sense, when phonics instructions are included in the curriculum, it should last for at least more than on semester. The fact that the teachers did not finish the training materials is also a sign for a longer period of instruction.

The comparison study reported in the previous chapter confirmed the effect of direct instruction on the development of phonological skills and the positive correlations between phonological skills and abilities in reading English as a second language. In the comparison study, the Guangzhou group developed their phonological skills as a result of the direct instructions they received in Pinyin. But in Hong Kong, it is not possible to rely on the teaching of Pinyin to develop students' phonological skills because there was little time spent on it in the curriculum and Hong Kong does not provide the Putonghua environment for students to practise the skills. Instead, phonics instruction will be more direct and effective in helping

students to develop their phonological skills. This experimental study reported in this chapter was conducted on Primary One students and the instructions were incorporated in their classroom teaching. Results confirmed the effect and benefits of such instructions in L2 reading development.

10. Conclusion

10.1 Summary

This thesis started with a simple question: Why do Chinese ESL learners in Hong Kong develop their reading skills so slowly and how should we help them? To answer this initial question, it is necessary to understand the reading process, the key components that affect the reading development, the differences between L1 and L2 reading, and also the specific constraints faced by Chinese ESL learners. The literature review reported in Chapters 2-5 was structured in this direction, with the aim of reviewing the necessary background information for setting up investigations into the possible causes and solutions for the reading difficulties faced by the ESL learners in Hong Kong.

The different reading models examined in Chapter 2 provide different perspectives of describing the reading process. Although the reading process can be viewed as a sequence of information flow (information processing models), as a set of components in a defined structure (componential models), or as a matrix of connections in the human brain (connectionist models), it is found that word recognition plays a central role in most of the reading models. The efficiency of word recognition is a determining factor of the effectiveness of the reading process. But

what determines the efficiency of word recognition? According to the dual-route models (Coltheart 1978, Coltheart, Curtis, Atkins & Haller 1993), there are two alternative pathways for lexical access, the visual route which allows direct access to meaning from the visual input, and the phonological route by which meaning is accessed via the phonological code. Both routes are possible for lexical access, but the Orthographic Depth Hypothesis (Frost et al. 1987; Frost 1994) discussed in Chapter 3 suggests that the phonological route is more efficient for decoding alphabetic languages because of the sound-based orthography of these languages. On the other hand, the visual route is more effective for decoding logographic languages, because meaning is directly mapped onto the written code and lexical access depends more on visual recognition than phonological recoding. In line with the ODH, research in English L1 reading found a strong relationship between phonological skills and reading development (Vellutino & Scanlon 1987; Shankweiler et al.1996). Training and longitudinal studies reported in Chapter 3 (Bradley & Bryant 1983; Lundberg, Olofsson, & Wall 1980; Perfetti, Beck, Bell & Hughes 1987) show that improvement in phonological skills will lead to improvement in reading achievement in the L1 context. Poor L1 readers can catch up with the performance of normal readers after receiving intervention training in phonological skills (Lundberg 1994; Lundberg et al. 1988).

With reference to the ODH, which claims that the demand on processing strategies is specific to the orthographic nature of a language, the L2 reading studies reviewed in Chapter 4 further suggest that L2 reading development is influenced by the reader's L1 literacy experience. Learners will naturally form habits of relying on particular decoding strategies to meet the cognitive demand of the orthographic nature of their native language. In the case of Chinese ESL learners, there is a gap between their decoding habits as developed in L1 and the strategies needed for decoding English as their L2. Their L1 requires them to use visual strategies for decoding, and this gradually builds up their strong preference for visual decoding. This also explains why Chinese ESL learners are weak in phonological skills. Further analyses of the Chinese orthography and the L1 and L2 learning experiences of the Hong Kong students reported in Chapter 5 suggest that their L1 literacy experience not only limits the development of phonological skills, but also affects their L2 reading efficiency because of the transfer of L1decoding strategies to L2 reading. As a result, Chinese ESL learners are less efficient in English decoding and their L2 reading development is slow.

The important research parameters identified in the literature review are summarised in two research rationales that this thesis has based on. The first rationale relates to the possible causes of L2 reading difficulties. It is found that L2 reading is

influenced by L1 literacy experience. In the case of Chinese ESL learners, the influence of their L1 includes limited alphabetic experience as well as transfer of L1 decoding approach to L2 reading. Both are constraints to the learners' phonological skills development in L2 reading. According to L1 reading research discussed on Chapter 3, poor phonological skills could be one of the causes for poor reading performance. Therefore, the Chinese ESL learners' limited phonological skills could be a roadblock for their L2 reading development. The second rationale relates to the possible solutions. Training in phonological skills is shown to be effective in improving not only L1 readers' phonological skills, but also in improving their reading performance (Bradley & Bryant 1983; Byrne & Fielding-Barnsley 1991; Durgunoglu and Oney 1999; de Jong & van der Leij 1999, 2002; Lundberg 1994; Lundberg, et al. 1988; Lundberg, Olofsson, & Wall 1980; Perfetti, Beck, Bell & Hughes 1987). Phonological skills training therefore seem to be a possible measure to help Chinese ESL learners ease their L2 reading difficulties.

Based on the above rationales and the research objectives stated at the beginning of this chapter, three research questions were drawn up, and answers to these questions would contribute to the understanding of L2 reading and also to helping the Chinese ESL learners in Hong Kong. The three research questions are:

i. *To what extent is the relationship between phonological skills and reading development found in L1 reading research valid in the L2 context of Chinese ESL learners?*

ii. *What is the effect of phonological skills training on the L2 reading performance of Chinese ESL learners in Hong Kong?*

iii. *What is the desirable level for phonological skills training for Chinese ESL learner in Hong Kong?*

Three studies were designed to answer the three questions. Both comparison study and training studies were used with the purpose of identifying the cause of the Chinese learners'L2 reading difficulties and also to find possible measures to help them. As discussed in Cain, Oakhill & Byrant (2000), these types of investigation together "can be used to help determine whether or not strength in one skill is the result or cause of strength in another skill" (p.32). The first study was a comparison study with the ability-matched design. Although this type of investigation cannot prove causality, it can be used to bring out the plausible causes of reading success, or conversely, reading failure. By comparing two groups of Chinese ESL learners at the same reading level but with different developmental profiles in terms of phonological skills and L2 exposure, the study aimed at identifying the relationship between phonological skills and reading development in L2 context, and thus finding a

plausible cause of L2 reading difficulties faced by Chinese students in Hong Kong. In this study, the two groups were compared on English phonological skills, decoding skills, reading comprehension and spelling. Results showed that although the two groups were at the same reading level, the Guangzhou group had better phonological skills and decoding skills. Since the two groups were matched at L2 reading ability, the differences found in phonological skills and decoding skills should not be attributed to reading ability. Instead, the alphabetic experience that the Guangzhou group gained in learning Pinyin may explain the better phonological skills developed among the group. Correlation analyses for both groups on phonological skills, decoding and reading comprehension showed that the Guangzhou group relied more on phonological skills for decoding and their decoding skills are closely related to their reading ability. Phonological skills appeared to be a distinguishing factor for the different reading development profiles between the Guangzhou group and the Hong Kong group.

Based on the findings of the comparison study and with reference to the results of training studies for L1 readers, two training studies in phonological skills were conducted with Hong Kong students at different levels, one at Secondary One and the other at Primary One levels. The two training studies together aimed at answering the three research questions. As discussed by Cain et al. (2000), the results of training

studies can be used to confirm causal relationships, and in this case, the relationship between phonological skills and reading development in an L2 context. Comparison of the two training studies would indicate a more desirable level for providing such training for the ESL learners. The results of the two training studies were mixed. In the first training study, which was conducted at S.1 level, no significant effect was found at the end of the training period, and the experimental group did not improve in phonological skills. Although the group did improve in decoding and reading, the improvements could not be related to phonological skills. On the other hand, results gathered from the second training study, which was conducted at P.1 level, were much more positive and the training effect was clear. The experimental group had more improvement in phonological skills than the control group. They also improved more in decoding and reading. Stronger correlations were found between phonological skills, decoding, and reading comprehension, suggesting that the experimental group relied more on phonological skills for decoding and reading.

The effect on spelling, however, was not clear in both studies. In the first study, the groups did not improve in spelling after the training period. In the second study, both groups improved in spelling, and the experimental group had improved more than the control group, but results of the regression analysis found only a small size effect of phonological skills as a predictor of spelling among the experimental group.

Therefore the effect of phonological skills on spelling is not clear. It is possible that spelling involves other influential skills than phonological skills. The results are in fact in line with the findings of the meta-analysis conducted on 37 studies related to phonics instruction reported by the U.S. National Reading Panel (2000) that phonics instruction produced growth among kindergarteners and 1st graders but did not improve spelling in students above 1st grade.

10.2 General Discussion

Each of the three studies contributes to the understanding of the relationship between phonological skills and reading in L2 context, and also to the possible effect of training in this area as remedy for the difficulties faced by Chinese ESL learners in Hong Kong. Putting the results of the three studies together, some conclusions can be drawn.

10.2.1 Phonological skills as a strong predictor for reading development

Results of the comparison study showed that phonological skills could be a facilitating factor leading to the Guangzhou group's more efficient development in L2 reading. It was possible that the group had developed their L2 reading proficiency faster than the Hong Kong group because of their better phonological skills, which they had developed in learning Pinyin. Without direct instruction, the Hong Kong

group had to rely on their exposure to the English language to develop phonological skills and results indicated that their L2 reading development was much slower than the Guangzhou group. The relationship between phonological skills and L2 reading development among Chinese ESL learners was further examined in the two training studies. Although there were mixed results found in the two training studies, the pattern was, to some extent, consistent. In the first training study, while there was no improvement found in phonological skills after the training, there was also very little improvement in reading. Both the experimental group and the control group did not make significant improvement over the training period. This pattern suggests that without improvement in phonological skills, the development of reading may remain slow. This is in line with findings in some longitudinal studies in the L1 contexts (e.g. Juel 1988; Chapman et al. 2001). On the other hand, results found in the second study were positive. The experimental group improved more than the control group not only in phonological skills, but also decoding skills and reading. With other major variables controlled for in the research design, the experimental group's better reading development profile can be attributed to their improvement in phonological skills. The results of the two studies together add strong evidence to a causal relationship between phonological skills and reading development in English, not only in L1, but also in an L2 context.

10.2.2 Age factor for training

The Hong Kong group in the comparison study were found weak in phonological skills even after six years of L2 learning experience. Together with many L2 reading research conducted with adult learners with a non-alphabetic L1 background (Akamatsu 1999; Haynes & Carr 1990; Holm & Dodd 1996; Huang & Hanley 1994; Jackson et al. 1994; Koda 1988; Rickard-Liow & Poon 1998), it appeared that these older learners, even after a long period of English learning, were still not able to improve their phonological deficiency. It seems that their reading difficulty in English, which is possibly caused by the influence of the non-alphabetic nature of their L1 orthography, will not be lifted by maturity or extended L2 learning experience. If direct instruction in phonological skills has been proved effective in helping L1 poor readers, the same treatment should be given to these L2 learners. However, most of the L1 training studies were conducted with young children, and the effect of such training on older learners is not clear. In fact, in the report published by the U.S. National Reading Panel (2000), they found that "phonics instruction taught early proved much more effective than phonics instruction introduced after first grade" (p.2-3). It is possible that phonological training may not be effective on older learners, especially in the L2 context. It seems that age could be a critical factor that needs to be considered when designing phonological training programmes.

Results of the two training studies further supported the age factor hypothesis. The second training study, which was conducted with a group of younger (P.1) students, was much more effective than the first study, which was given to older (S.1) students. However, it has to be noted that age was not the only difference between the design of the first and the second training study. The two training studies were different in terms of the age of the participants (thirteen vs. six years old), length of the training period (twelve vs. fifteen weeks), treatment mode (after school lessons vs. normal class), teacher (outsider vs. class teacher), pre-test and post-test (parallel tests vs. repeated tests). Although there are many possible reasons for the training of older learners being ineffective, age itself is worth considering. As the learners, especially the Chinese ESL learners, grow older and they become more proficient in reading, much of their attention would be put on the semantic and the pragmatic values of the words and/or the text they read. They rely much on the visual information for word recognition and their sensitivity to the value of phonemic elements within individual words may be reduced. Moreover, as the Chinese are more inclined to use the visual approach for decoding, the more proficient they are in their L1, the stronger the L1 influence will be. Learning a new decoding approach will be difficult for them. Thus in general, it seems that phonological training to younger learners will be more effective than to old learners. For younger learners, there will be much less L1

influence as their L1 literacy exposure is still limited and the visual decoding habit is not deep-rooted. Although it appears that age is a critical factor for phonological skills training, the actual effect of it on training success is not clear at this stage. As there is still very little information about such training on older learners, it is not known whether there is a sliding scale on the training effect, or whether there is a barrier level for such training. This will be an area for future research.

10.2.3 Curriculum design

In the comparison study, the Guangzhou group showed better phonological skills than the Hong Kong group. The Guangzhou group not only scored higher in the phonological tasks, but the range of scores and the standard deviation were also smaller. The results indicate that direction instruction is not only more effective, but also more reliable than language exposure for developing phonological skills. The same effect was found in the second training study. The experimental group, after receiving direct instruction developed better phonological skills than the control group who had the same amount of learning time but in alternative mode. The results suggest that direction instruction in phonological skills should be included in the curriculum for L2 reading.

With reference to the differences between the first and second training studies, there are some further implications on instruction design. First, direct instruction in

phonological skills may be more effective when integrated into normal classroom teaching. As shown in the first training study when the training was given in after-school sessions, students were not motivated and it was hard for the trainer to relate the phonological training to the English lessons in classroom. In the second study, whereas training was integrated into the classroom teaching, students were more motivated and teachers can easily relate the skills onto reading and teaching new vocabulary to the students. Second, with reference to the age factor discussed earlier, it may be more effective to start the instruction at an early age, e.g. kindergarten or P.1. When intervention training is given to older learners, the duration should probably be longer and the programme should be more intensive so as to strengthen the input for the development of phonological skills and to counteract the influence from L1 decoding habits.

There is also an urgent need for training materials for L2 learners at different levels. At present, most of the teaching materials were developed with reference to L1 learners and some may not be applicable in L2 contexts because there are fundamental differences between L1 and L2 reading. For example, many of the phonics exercises request students to supply words with the same sound, or to match pictures with the same initial phonemes. Unlike L1 learners who have developed an acceptable range of oral vocabulary before learning to read, L2 learners, especially young learners, come

with very limited oral vocabulary, and therefore the above exercises which are meant to be simple ones for the L1 learners, will be difficult for L2 learners. The phonics exercises may be turned into vocabulary exercises if not used properly by teachers. Therefore when designing and choosing exercises, teachers should be aware of the limitations among L2 learners and perhaps confine the vocabulary range within the learners' knowledge and work more on the segmentation and blending skills that Chinese learners are particularly weak at. Moreover, most of the existing phonics materials are targeting young learners, and were designed with the games approach. Such approach may not be suitable for older learners. They may find it embarrassing and therefore not motivated to participate. There should be teaching materials that cater for older learners. Such materials could be more text-based so that phonological skills can be developed in meaningful context.

10.2.4 Teacher training

Teacher training has always been an important component in curriculum reform. If instruction in phonological skills is to be incorporated in the mainstream curriculum and delivered by the class teachers, teachers need to clearly understand the role of phonological processes in learning to read, and be provided with a theoretical framework to support the teaching of phonological skills. Teachers need to be informed of the significance of the direct instruction so that they will be motivated in

their teaching. Apart from student motivation, teacher motivation is also a crucial factor for successful curriculum reform. Blachman, Tangel, Ball, Black & McGraw (1999) comment that "teachers typically lack this information and that they are undereducated for the very demanding task of teaching reading and spelling explicitly" (p. 276). This is also true in Hong Kong where most teachers are native speakers of Chinese and did not receive direct instruction in phonological skills in their own L2 learning experience. These teachers need a paradigm shift in their teaching approach to enable them to move away from the traditional "look and say" method which was adopted from the teaching of Chinese. There should be teacher training and coaching to help them incorporate phonics instruction in their classroom.

10.3 Limitations

Three studies were used in this thesis to answer the initial question raised, which was then further refined into three research questions with reference to the literature reviewed. In the research design, much effort has been put in to ensure both the internal and ecological validity of the studies. In the comparison study, two ESL groups of Chinese L1 background were used, in order to avoid the complications of linguistic backgrounds in the comparison. The two groups were matched on reading ability (RAM) which is considered to be an effective method to identify causes of

delayed or deficient word reading skills (Bryant 1986, Cain et al. 2000). The two training studies were conducted at different levels with the aim at testing the possible solutions for different age groups. The training was classroom-based in order to allow generalisation of results and training methods for classroom use. Major principles for the control of internal validity were applied, e.g. random assignment of participants into respective condition groups, counterbalance between intervention treatment and alternative treatment, control measures of treatment fidelity, reasonable sample size. However, like many other research, there are limitations in the studies, namely limitations in skills measurement and limitations in training delivery.

10.3.1 Limitations in L2 research

Unlike L1, L2 reading research is more diversified as it involves learners who bring along linguistic influence from their L1, and who start learning the second language at different cognitive and educational levels. As discussed earlier in the literature review, L2 reading difficulties and the respective remedies are often specifically related to the learners' L1 background. Therefore L2 research focusing on the same L1 language group is limited. The reference that can be drawn from previous research in terms of research design and measurement tools is limited. When looking for test instruments for the three studies in this thesis, it was found that most of the research conducted with Chinese ESL learners was adult-based. Many of the

instruments used in the previous studies were not suitable for the age groups (not even the S.1 groups) involved in the present studies. There are very few published or sufficiently tried-out instruments for L2 learners, especially younger learners. Therefore, some tasks used in the three studies were adapted with modifications from previous research, and other tasks were created for the specific purposes. As a result, the pre-test reliabilities of the two tasks, namely rhyme judgment and homophone judgment, in the first training study were lower than expected (Alphas = .52 & .62 respectively). Although the post-test reliabilities improved, limited availability of reliable measurement tools is a concern for future research in this area.

Another measurement difficulty was the choice between using parallel tasks or repeated tasks in the pre-test and post-test administrations. This is in fact an intrinsic dilemma in studies with this design but the difficulty has seldom been discussed in the literature. Very few researchers have reported whether they had used parallel tasks or repeated tasks in their studies. The obvious advantage of using repeated tasks is that they allow direct comparison of results without any possible variations related to test items. But there is also the concern that practice effect may build up when the same tasks had been administered repeatedly to the same group of students. So theoretically speaking, parallel tasks may be a better alternative. However, it is not easy to find truely parallel tasks. As mentioned in the previous paragraph, suitable tasks are

difficult to find, not to mention suitable parallel tasks. In fact, as Hatch et al. (1991) commented, "equating tests is another field of research in itself" (p.532).

After considering the possible practice effect of using repeated tasks, especially among teenage learners, it was decided to use parallel tasks in the first training study. Unfortunately, results showed some possibilities that the phoneme deletion task used in the two test administrations might not be parallel. This created difficulties with the interpretation of the results. To avoid this confounding effect arising from differences between tests, it was then decided that repeated tasks should be used in the second training study, in order to assess the effect of the training directly. The use of repeated tasks was found more reliable and it was believed that when both the experimental group and the control group were given the same tasks, the possible practice effect, even if it exists, will not affect the comparison of the two groups.

Apart from the design of measurement tools, the limited scope of measurement in the studies also created problems in the interpretation of results. In the comparison study, L1 reading and Pinyin skills were not measured. Therefore it cannot be certain that the Guangzhou group had transferred their phonological skills developed in Pinyin to L2 reading. The high standard deviation shown in results of the Guangzhou group in the word naming task suggested that some students in this group either were not able to transfer the phonological skills developed in Pinyin to L2 word decoding,

or were weak in Pinyin as well. Without measurement in Pinyin, this uncertainty could not be clarified.

In the two training studies, the students' L1 reading skills and visual skills were not measured. Without knowing their L1 reading ability, it was difficult to relate L1 proficiency to the development of L2 reading. Moreover, without measuring the visual skills it was not clear whether the visual route had been used as a compensatory strategy for decoding and reading. Both the experimental group and the control group in the first training study made small improvement in decoding and reading after the training period, but not in phonological skills. It was speculated that the students had improved their visual skills which had led to their improvements in decoding and reading. However, this speculation could not be verified in this study as their visual skills were not measured.

10.3.2 Limitations in classroom-based studies

The two training studies were classroom-based, in which there are constraints that need to be observed. The schools preferred minimal disturbance to their daily routine. With this request in mind, there were considerations for the test administrations and training arrangements. The tests, whenever possible, were administered as class test, although some were supposed to be individual tests in the original design. This was done in order to minimise the time needed for the tests so

that students would not be asked to leave the classroom or stay after school for doing the tests. There are also constraints on the training period such that it is not expected to be longer than one school term. School planning is normally made on the bases of a term and schools are not willing to stretch the training arrangements beyond the term. So both the tests and the training had to be administered within this period. The results showed that the training period in both studies may not be long enough, especially in the first study when training was given to older learners. But even in the second study when significant effects of the training were found, the teachers were not able to cover all the materials prepared for the period. In the first study when training was conducted after school, there was also the problem of attendance and motivation because students saw it as extra work for them. However, it was difficult to convince the school to incorporate the training in the daily lessons when the training experiment was considered as something that deviated from their teaching scheme.

10.4 Further research

As mentioned earlier, the number of L2 reading research, especially training studies in phonological skills is still limited and among those that are available, not many of them were conducted with Chinese learners. Clearly, more research,

especially training studies, is needed in this area in order to find effective way to alleviate the difficulties faced by the Chinese ESL learners. In particular, when training studies of this kind are conducted, the ecological validity should be carefully considered so that results can be generalised and applied in classrooms. The limitations discussed in the previous section should be taken into consideration for research design.

Future training studies may focus on different variables, such as the training method and the training period, in order to find the most efficient and effective way to help the Chinese learners. The age factor for training also needs further investigation. Training studies for different age groups should be conducted. It is possible that there is a barrier level for improvement in phonological skills, and such a level could be related to the learners' age, or L1 reading proficiencies. It is important for researchers and teachers to know more about this possible barrier level, so that alternate remedies may be devised to help learners beyond the level.

Teacher training is also an area that should not be neglected. Future research can be conducted to find out more about teachers' training needs for teaching phonological skills in class. Different types of teacher training methods, both for pre-service and in-service teachers, may need to be identified.

Finally, in training studies, the long term effect of the training is often more important than the immediate effect. The sustainability of the effect is crucial to the value of the training. In the second training study, positive immediate effects were identified. It will be important to follow up with a longitudinal study after substantial period of time to test the long term effect of the training. If the effects are found to be diminishing, then more extended training or regular interval training should be introduced to reinforce the effect.

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Appendix 1 Test Instrument for Study I

Appendix 1.1

Reading Test

Part 1

QUESTIONS 1-5

Where can you see these notices? Write the correct letter A, B or C in the answer sheet.

在哪裡你可以看見這些告示? 寫出正確答案在答案紙上。

EXAMPLE		ANSWER
0 Return books here	A. in a restaurant B. in a bank C. in a library	C

1.	NO MORE THAN 5 PEOPLE	A. on a bus B. in a lift C. in a church
2.	**HALF PRICE SALE**	A. at a station B. in a theatre C. in a shop
3.	PARKING FOR GUESTS ONLY	A. outside a church B. outside a hotel C. outside a zoo
4.	2ND FLOOR Children's Clothes	A. on a shirt B. in a shop C. in a school
5.	DRY CLEAN ONLY	A. on a window B. on a coat C. in a bank

QUESTION 6-10

Which notice (A-H) says this (6-10), write the correct letter A-H in the answer sheet.

從 A-H 中找出與 6-10 配合之告示, 將答案寫在答案紙上。

EXAMPLE	ANSWER
0. You cannot have a cigarette here	☐

6. You can get a car at any time. ☐

7. You pay the same price but you get more. ☐

8. In the evening, children may not come in. ☐

9. There are two prices for tickets. ☐

10. You must use the stairs. ☐

A. TOMATO JUICE 10% extra-FREE

B. NO RIGHT TURN

C. Admission £6.00 Schoolchildren, Student And Over-65s £3.00

D. LIFT OUT OF ORDER

E. Beach Umbrellas For Hire

F. 24-hour service

G. NO SMOKING SECTION

H. 7:30P.M. – 9:30P.M. Adult Swimming Only

Part 2

QUESTIONS 11-15

Read the descriptions (11-15) of some parts of the body. What is the name of each part of the body (A-H)? Write the correct letter A-H in the answer sheet.
細閱以下 11-15 題關於身體各部份的描述, 將其名稱(A-H) 填在答案紙上。

EXAMPLE	ANSWER
0. This grows on your head	☐

11. You have got five of these on each foot. ☐

12. You hear with these. ☐

13. You use these when you walk. ☐

14. You see with these. ☐

15. You have got this in your mouth. ☐

PARTS OF THE BODY

A. ears

B. eyes

C. fingers

D. hair

E. legs

F. teeth

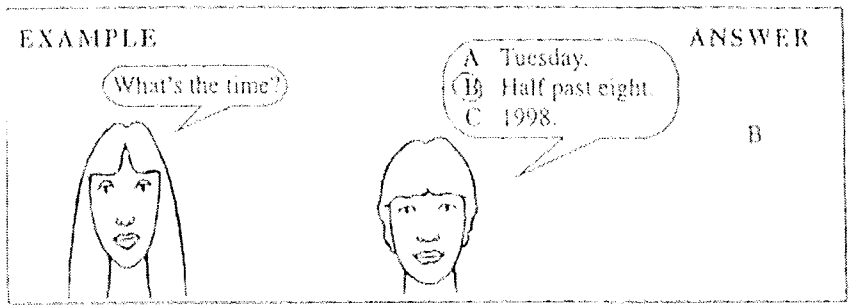
G. toes

H. tongue

Parts 3

QUESTIONS 16-20

Complete the following five conversions. Write the correct letter A, B or C in the answer sheet.
從 16-20 各題選擇中選出合適答案, 以完成下列五段對話。



16. Excuse me, when does the next train leave?
A. From Platform 4.
B. Yesterday.
C. In ten minutes.

17. When can we go to the cinema?
A. I'm free on Sunday.
B. I like the cinema.
C. I hope you can come.

18. Have a good holiday.
A. You have.
B. Your will.
C. You too.

19. How much is your new shirt?
A. It's a red shirt.
B. It was very cheap
C. It was in a shop.

20. Do you speak English?
A. No, I'm not.
B. Only a little.
C. Yes, very much.

QUESTIONS 21-25

Complete the conversation. What does David say to the waiter? Write the correct letter A-H in the space provided on the answer sheet.

從 A-H 中選出合適答案, 以完成下一段對話。

EXAMPLE
Waiter: Good evening, sir. How can I help you?
David: O.....

Waiter: Certainly, sir. This one by the window?

David: 21_____

Waiter: And what would you like to eat?

David: 22 _____

Waiter: Spaghetti with meat and tomato sauce is very nice, or there is four-cheese pizza.

David: 23_____

Waiter: Fine. And would you like anything with it? Garlic bread or...

David: 24_____

Waiter: OK. And to drink?

David: 25_____

Waiter: Yes, certainly. So that's one four-Cheese pizza, one green salad and one mineral water. Thank you, sir

A. Have you got mineral water?

B. Good evening. I'd like a table for one.

C. How much is it?

D. What have you got?

E. I think I'll have the pizza.

F. Can you bring me the menu, Please?

G. Nothing more, thanks. Oh yes, perhaps a green salad.

H. Yes, that's fine.

Part 4

QUESTIONS 26-32

Read the article about the London Police and answer the questions. rite the correct letter A, B or C in the answer sheet.

細讀以下一段關於倫敦警察的文章, 寫出各題(26-32)之正確答案在案答案紙上。

THE HISTORY OF THE LONDON POLICE

Today there are policemen everywhere, but in 1700 London had no policemen at all. A few old men used to protect the city streets at night and they were not paid very much.

About 300 years ago, London was starting to get bigger. The city was very dirty and many people were poor. There were so many thieves who stole money in the streets that people stayed in their homes as much as possible.

In 1750, Henry Fielding started to pay a group of people to stop thieves. They were like policemen and were called 'Bow Street Runners' because they worked near Bow Street.

Fifty years later, there were 120 Bow Street Runners, but London had become very big and needed more policemen. So, in 1829, the first Metropolitan (or London) Police Force was started with 3000 officers. Most of the men worked on foot, but a few rode horses. Until 1920 all the police in London were men.

Today, London police are quite well paid and for the few police officers who still ride horses, the pay is even better than for the others.

EXAMPLE		ANSWER
0. In 1700, there were	A. Policemen everywhere. B. policemen only in London. C. no policemen in London.	C

26. In 1700, the men who protected the street were paid
    A. a lot
    B. a little
    C. nothing

27. 300 years ago, many people
    A. came to live in London.
    B. wanted to leave London.
    C. had big house in London.

28. People did not leave their house because
    A. the city was not clean.
    B. they had no money.
    C. they were afraid.

29. The Bow Street Runners
    A. stole money.
    B. stopped people stealing.
    C. paid people to steal.

30. In 1800, there were
    A. enough policemen.
    B. not enough policemen.
    C. too many policemen.

31. Of the first 3000 metropolitan policemen,
    A. all of them rode horses.
    B. some of them rode horses.
    C. most of them rode horses.

32. Today, police officers who work with horses are paid
    A. more than their colleagues.
    B. the same as their colleagues.
    C. half as their colleagues.

Part 5

QUESTIONS 33-40

Read the information about rhinos. Choose the best word (A, B or C) for each space (33-40). Write the correct letter A, B or C in the answer sheet.
細讀以下一段關於犀牛的文章，寫出正確答在案答案紙上。

EXAMPLE

There __0__ five different types of rhino in the world today. The Black and White Rhino live in __33__ open fields of Africa. The others live in forests in Asia.

All rhinos have big, heavy bodies. Their skin is very hard and they have very __34__ hair. The great body __35__ the rhino stands __36__ four short legs. Each foot has three toes. They usually walk very __37__, but they can run at 50 kilometres an hour. Rhinos are usually quiet and calm animals, and they only__38__ grass and other plants.

A baby rhino weighs 40 kilos when it is born. It has been inside its mother __39__about fifteen months. An adult rhino weighs over 200 kilos and may __40__to be 50 years old.

0	A. are	B. is	C. were
33	A. these	B. the	C. an
34	A. little	B. many	C. few
35	A. to	B. of	C. for
36	A. on	B. in	C. at
37	A. slow	B. slower	C. slowly
38	A. eat	B. eats	C. ate
39	A. since	B. during	C. for
40	A. lives	B. living	C. live

Part 6

QUESTIONS 41-50

Complete this LETTER. Write ONE word for each space 41-50. Write your words in the space provided on the answer sheet.

在 41-50 之空格內填上合適單字, 以完成下列之信件。

17 Green Street
Camden
London

9 August 1997

Dear John,

Thank you for helping (Example: me) with my English. You are 41_____ very good teacher. I enjoyed my stay 42_____ Cambridge.

Now I am staying at my brother's flat. 43_____ is studying to be a doctor. I will stay there 44_____ him for two weeks 45 _____ then go home.

I like London very 46_____. We 47 _____ to Regent's Park by bus yesterday. It 48 _____ very sunny and we had a good time.

Tonight, I am 49 _____ to see a film with my brother and some 50_____ his friends.

I'll write again form Greece.

Best wishes,

Koslas

Part 7

QUESTIONS 51-55

Read the information about a girl who wants to go to a summer camp for young people. Fill in the information on the Application Form. Write the information in the space provided on the answer sheet.

細讀以下一段資料, 填寫所附申請表格。

Claire is in Form 2 at school. She lives in Mongkok, with her parents, Linda and Derek Cheung. She is 13 years old and likes swimming and playing the piano. She will go camping with her best friend, Rosie Lee.

YOUNG PEOPLE'S CAMP

Application Form

First name:		Claire
Surname:	51.	_____
Age next birthday:	52.	_____
Address:	53.	_____
Hobbies:	54.	_____
In the camp, I would like to stay with:	55.	_____

Appendix 1.2

Name:_____ Class:_____ Class No._____

Rhyme Judgment Task

1. beg – bag
2. were – where
3. jar – tar
4. fit – fat
5. cue – new
6. date – mate
7. bear – pair
8. put – but
9. sort – bought
10. ship – shop
11. cat – kit
12. bush – push
13. laugh – staff
14. dear – wear
15. wait – wet
16. earn – turn
17. said – paid
18. fine – mine
19. weight - height
20. rang – sang

Appendix 1.3

Phoneme Deletion Task

First Phoneme Deletion

e.g.:
stop – top cup – up crude – rude

1. pen	6. scar	11. farm
2. fall	7. block	12. told
3. sit	8. flow	13. surge
4. bus	9. stall	14. daft
5. cat	10. cloud	15. pitch

Last Phoneme Deletion

e.g.:
farm – far mint – min belt – bel

16. peak	21. storm	26. wind
17. maid	22. shelf	27. badge
18. seat	23. train	28. joint
19. moon	24. kneel	29. pinch
20. mass	25. sheep	30. help

Appendix 1.4

Name:_____ Class:_____ Class No. _____

Homophone Decision Task

Put a ✓ if you think they have the **same** sound.
Put a × if you think they have **different** sound.
Put a ? if you are **not sure**.

e.g. stair-stare ✓ like-bike × fun-phun ✓
stair-stain × peace-piece ✓ git-get ×

1. pear-pair ____
2. her-hurr ___
3. rule-role ___
4. move-muve ___
5. cell-sell ___
6. love-loaf ___
7. pea-pie ___
8. home-hume ___
9. tight-tigh ___
10. two-tow ___
11. sun-soon ___
12. die-dye ___
13. through-though ___
14. won-one ___
15. new-knew ___
16. aunt-aren't ___
17. him-hom ___
18. blows-blouse ___
19. boot-boat ___
20. rain-rane ___
21. break-brake ___
22. week-weak ___
23. fare-far ___
24. fail-fale ___
25. neck-neak ___
26. sail-sale ___
27. flour-flower ___
28. four-foar ___
29. mine-min ___
30. new-now ___

Appendix 1.5

Word Naming

Read the following words (with numbers) one by one.

e.g. 1. cat (Number one, cat)

---

1. main	**16. tain**	**28. goan**
2. coach	**17. goach**	**29. taich**
3. coal	**18. joal**	**30. soag**
4. dug	**19. sug**	**31. jul**
5. less	**20. chob**	**32. leck**
6. loud	**21. vag**	**33. juf**
7. job	**22. peef**	**34. choub**
8. bag	**23. fook**	**35. fod**
9. beef	**24. cheed**	**36. vud**
10. loop	**25. losh**	**37. jeeb**
11. josh	**26. meep**	**38. leem**
12. loan	**27. hain**	**39. chud**
13. miss		
14. step		
15. sol		

Appendix 1.6

Name:_____ Class:_____ Class No._____

Spelling

Regular words	*Irregular words*	*Nonwords*
1. turn	11. watch	21. tard (yard)
2. step	12. shall	22. pove (love)
3. park	13. touch	23. frear (hear)
4. clean	14. phone	24. prand (sand)
5. shell	15. bowl	25. soll (roll)
6. hunt	16. steak	26. woth (moth)
7. grape	17. wool	27. stull (dull)
8. not	18. taste	28. shome (home)
9. bird	19. want	29. fint (hint)
10. coin	20. warm	30. chook (cook)

Appendix 2 Test Instrument for Study II

Appendix 2.1

Reading Test (post-test)

Part 1

QUESTIONS 1-5

Where can you see these notices? Write the correct letter A, B or C in the answer sheet.

在哪裡你可以看見這些告示? 寫出正確答案在答案紙上。

EXAMPLE		ANSWER
0 Return books here	A. in a restaurant B. in a bank C. in a library	C

1. NO Food in Classrooms	A. in a restaurant B. in a hotel C. in a school	
2. Pull	A. on a menu B. on a road C. on a door	
3. BEST BEFORE December '98	A. on clothes B. on machines C. on food	
4. Stairs to first floor	A. in a shop B. in a taxi C. in a park	
5. DANGER Low Bridge	A. in a hospital B. on a road C. in a lift	

QUESTIONS 6-10

Which notice (A-H) says this (6-10), write the correct letter A-H in the answer sheet.

從 A-H 中找出與 6-10 配合之告示, 將答案寫在答案紙上。

EXAMPLE	ANSWER
0. We can answer your questions	D

6. You can't drive this way?	A. Adult $50 Under 12s FREE
7. Children do not have to pay.	B. PLEASE USE OTHER DOOR
	C. Open 24 hours a day
8. You can shop here six days a week.	D. INFORMATION
	E. Police Notice Road Closed
9. You can't go here on Sunday.	F. Open daily 10-6 (except Mondays)
	G WAITING ROOM
10. You must not go in this way.	H. OPEN WEENDAYS

Part 2

QUESTIONS 11-15

Read the descriptions(11-15), write the correct letter A-H in the answer sheet.
細閱以下 11-15 題, 將其名稱(A-H) 填在答案紙上。

EXAMPLE	ANSWER
0. You can take the train from here.	G

11. Your car can be repaired here. ☐

12. You eat this when you are hot. ☐

13. You may see these on the water. ☐

14. You wear these when it is sunny. ☐

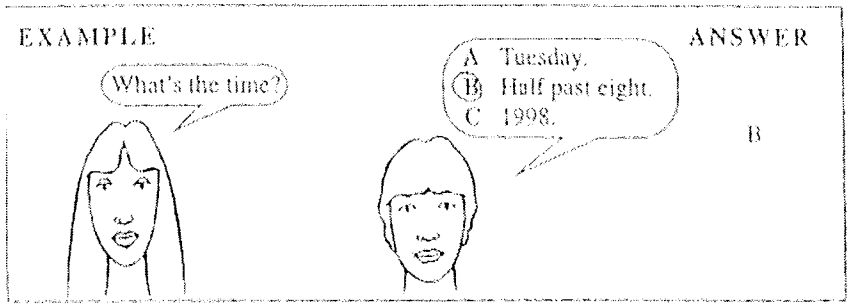
15. You stay here when you are ill. ☐

A. fish
B. ice-cream
C. church
D. factory
E. garage
F. hospital
G. station.
H. sunglasses

Parts 3

QUESTIONS 16-20

Complete the following five conversions. Write the correct letter A, B or C in the answer sheet.
從 16-20 各題選擇中選出合適答案, 以完成下列五段對話。



16. Why don't you ask Sandra?
A. I hope so.
B. Never mind.
C. That's a good idea.

17. Congratulations!
A. I'm sorry.
B. Thank you.
C. What a pity!

18. How is your son?
A. Fine, thanks.
B. Four months old.
C. With his father.

19. Can I help you?
A. At two o'clock.
B. I can help you.
C. Yes, sure.

20. I'd like to try those shoes on, please.
A.What size are you?
B. Are they black?
C. Do you like it?

QUESTIONS 21-25

Complete the telephone conversation. What does Tom say to Maria? Write the correct letter A-H in the space provided on the answer sheet.

從 A-H 中選出合適答案, 以完成下列電話對話。

EXAMPLE

Maria: Hello, Tom. This is Maria.

Tom: 0 ___E___

Maria: Fine. Thank you for your party last night.
I had a great time.

Tom: 21 _____

Maria: Tom, did I leave my coat at your house last night?

Tom: 22 _____

Maria: It's green with a black collar.

Tom: 23 _____

Maria: I'm going to work now, Can I come and get it this evening?

Tom: 24 _____

Maria: I'll come at 6:30.

Tom: 25 _____

Maria: OK, Goodbye.

A . Well. two people left their coats behind. What colour is yours?

B. You'll have to come before 7:15, I 'm going out then .

C. Yes, there's a green one here.

D. What time is it?

E. Hi Maria, how are you?

F. All right, see you later.

G. It's a beautiful coat, isn't it?

H. Good. I'm glad you enjoyed it.

Part 4

QUESTIONS 26-32

Read the article about burglars.

Are sentences 26-32 'Right' (A) or 'Wrong' (B)?

If there is not enough information to answer 'Right' (A) or 'Wrong' (B), choose 'Doesn't say' (C). Write the correct letter on the answer sheet.

細讀以下一段關於小偷的文章, 如以下[illegible], 選 (B), 如資料不足以說明是對或錯, 選(C). 寫出[illegible]案在答案紙上。

BURGLARS LOVE THE AFTERNOON

MOST house burglaries happen between 2 p.m. and 6 p.m., say the police.

Inspector Ian Saunders told our newspaper that the number of house burglaries has gone up by more than 30% compared with last year. He also said that 67% of burglaries happen when people have gone out and left a door or window open .

He went on to report that night-time burglaries are unusual because families are usually at home at that time. But he said that winter afternoons are the best time for burglars because it is dark and they can't be seen easily. Also many houses are empty at that time.

Inspector Saunders said that it is a good idea to leave lights on in living rooms and bedrooms to keep burglars away. He also asked neighbours to watch the other houses in the street when people are away. They should call the police if they see anything strange. 'We will also tell you how to make your house safe,' Inspector Saunders said. 'This kind of help costs nothing.'

EXAMPLE
0. Most burglaries happen in the morning
A. Right B. Wrong C. Doesn't say

26. The number of house burglaries is the same as last year.
A. Right B. Wrong C. Doesn't say

27. Most burglars are men.
A. Right B. Wrong C. Doesn't say

28. People sometimes make things easy for burglars.
A. Right B. Wrong C. Doesn't say

29. Summer is more difficult for burglars.
A. Right B. Wrong C. Doesn't say

30. Burglars don't usually go to houses with lights on.
A. Right B. Wrong C. Doesn't say

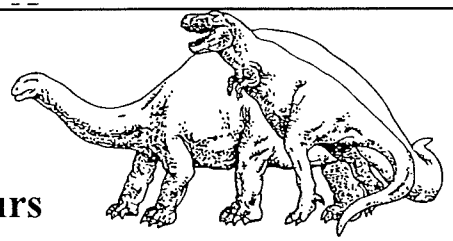
31. Burglars usually drive cars.
A. Right B. Wrong C. Doesn't say

32. You have to pay for information from the police.
A. Right B. Wrong C. Doesn't say

Part 5

QUESTIONS 33-40

Read the information about dinosaurs. Choose the best word (A, B or C) for each space (33-40). Write the correct letter A, B or C in the answer sheet.
細讀以下一段關於恐龍的文章, 寫出正確答在案答案紙上。



Dinosaurs

No one has 0 seen a dinosaur. The last dinosaur died about 60 million years ago, a long time 33 there were any people on the earth. 34 knows for sure why they all died. The nearest living relatives of dinosaurs are birds.

Dinosaurs didn't all look the same. There were more 35 5000 kinds. Some were very small, 36 others were giants. The largest were bigger than any other animals that ever lived 37 land. The Brontosaurus, for example, was twenty metres long, and it 38 plants. The Tyrannosaurus Rex was not as 39, but it was stronger. It had sharp teeth for eating meat. Also it could run fast 40 it had long back legs.

EXAMPLE			
0	A. ever	B. never	C. yet

33	A. that	B. when	C. before
34	A. Everybody	B. People	C. Nobody
35	A. than	B. that	C. as
36	A. as	B. but	C. or
37	A. in	B. on	C. at
38	A. ate	B. eat	C. eats
39	A. bigger	B. biggest	C. big
40	A. that	B. because	C. where

Part 6

QUESTIONS 41-50

Complete these LETTERS. Put ONE word for each space 41-50. Write your words in the space provided on the answer sheet.

在 41-50 之空格內填上合適單字, 以完成下列之信件。

14 Sheffield Road
Rotherham
20 May 1997

Dear Mary,

I will (Example: be) in London 41___ Thursday morning. Would you like to have lunch 42___ me? Write and tell 43_ when you are free and where I 44___ meet you. Hope to see you then.

Yours

Joan

20 DISBURY DRIVE
LONDON NW1
25 May 1997

Dear Joan,

Thanks 45 your letter. I got it this morning. Yes, I'd 46 to see you. How about meeting outside 47 office at one o'clock? There's 48 good Italian restaurant near there. 49 you like Italian food?

I have to be back at work by two o'clock, so please don't 50 late!

Yours
Mary

Part 7

QUESTIONS 51-55

Read this note from Sheila. Fill in the information about the Film Club. Write the information in the space provided on the answer sheet.

細讀以下一張便條, 填寫關於電影會的資料。

Andy,

About the next Film Club evening. It's going to be in October, on the 15th (which is a Tuesday). The film will be 'The Last Emperor' and tickets will cost $3.00. We have booked the school hall from 8 o'clock.

Thanks

Sheila

SCHOOL FILM CLUB

NEXT MEETING

DAY:	Tuesday
DATE:	51.
TIME:	52.
PLACE:	53.
FILM:	54.
PRICE:	55.

Appendix 2.2

Name:_____ Class:_____ Class No._____

Rhyme Judgment Task - post test

1. tight – bite
2. bed – bad
3. cow – low
4. fair – care
5. ball- bill
6. rain – pain
7. sin – sun
8. mist – missed
9. song – wrong
10. flood – food
11. cat – cut
12. wife – life
13. worm – form
14. beat – heat
15. cloud – crowd
16. maid – grade
17. lace – lice
18. steak – peak
19. sing – ring
20. post – lost

Appendix 2.3

Phoneme Deletion Task - Post Test

First Phoneme Deletion

e.g.:

stop – top cup – up crude – rude

1. pin	6. score	11. fowl
2. foil	7. blow	12. task
3. send	8. floss	13. sour
4. bat	9. stool	14. ditch
5. cup	10. clock	15. pink

Last Phoneme Deletion

e.g.:

farm – far mint – min belt – bel

16. leek	21. gloom	26. held
17. paid	22. chief	27. barge
18. feet	23. stain	28. salt
19. soon	24. grill	29. beach
20. kiss	25. grasp	30. pump

Appendix 2.4

Name:_____ Class:_____ Class No. _____

Homophone Decision Task—Post Test

Put a ✓ if you think they have the **same** sound.
Put a × if you think they have **different** sound.
Put a ? if you are **not sure**.

e.g. stair-stare ✓ like-bike × fun-phun ✓
stair-stain × peace-piece ✓ git-get ×

1. sun-son _____
2. sea-see _____
3. care-car _____
4. cent-sent _____
5. sign-sing _____
6. dim-dom _____
7. heart-hart_____
8. rail-rale _____
9. cool-coal _____
10. rough-roof _____
11. core-coar _____
12. weak-wake _____
13. hour-our _____
14. too-toe _____
15. comb-cumb _____
16. tane-tain _____
17. wait-weight _____
18. write-right _____
19. might-meet _____
20. surf-sirf _____
21. tone-town _____
22. beach-beech _____
23. soup-soap _____
24. leak-leck _____
25. moon-mune _____
26. us-use _____
27. win-wain _____
28. bear-bare _____
29. mail-male _____
30. weight-wight_____

Appendix 2.5

Word Naming – Post Test

Read the following words (with numbers) one by one.

e.g. 1. cat (Number one, cat)

---

1. **ship**
2. **tail**
3. **dog**
4. **truck**
5. **clef**
6. **club**
7. **need**
8. **drum**
9. **deep**
10. **fresh**
11. **check**
12. **god**
13. **soon**
14. **mud**
15. **seem**
16. **pog**
17. **juck**
18. **lef**
19. **fout**
20. **jub**
21. **fip**
22. **veed**
23. **lum**
24. **tess**
25. **yoal**
26. **fesh**
27. **chail**
28. **fiss**
29. **vep**
30. **paig**
31. **chol**
32. **paf**
33. **veeg**
34. **haip**
35. **boon**
36. **fep**
37. **meesh**
38. **dol**
39. **loash**

Appendix 2.6

Name:_____ Class:_____ Class No._____

Spelling - Post Test

Regular words	*Irregular words*	*Nonwords*
1. hope	11. give	21. noor (door)
2. race	12. none	22. det (get)
3. teach	13. broad	23. bave (save)
4. chain	14. foot	24. stear (near)
5. pill	15. sweat	25. rown (town)
6. rust	16. ghost	26. heaf (leaf)
7. plump	17. push	27. mour (sour)
8. hole	18. sour	28. porm (form)
9. rail	19. wolf	29. cleel (peel)
10. farm	20. warn	30. pood (food)

Appendix 3 Training Materials for Experimental Group in Study II

Page

Appendix 3.1

Lesson Plan for Session 1

A. Nursery rhyme

Slide 1: Show the picture of the nursery rhyme

☺ Read: 'Three blind mice'

- Repeat + 'when you hear a rhyme, you clap your hands'
- Repeat reading and clapping hands with students
- What are the rhyming pairs?

wife – knife - life

Slide 2 : Three blind mice

- Can you think of another word to rhyme with:

mice – ice
tail – nail
ran – pan
three – tree
fools - tools

Slide 3 : the 5 word pairs

Slide 4 "cat" – 'Which word rhymes with cat?'

Slide 5 "mice" – 'Which word rhymes with mice?'

Slide 6 "wife" – 'Which word rhymes with wife?'

Slide 7 "run" – 'Which word rhymes with run?'

distribute a copy of the nursery rhyme and read with them together again

****

B. Phonemes

distribute picture and ask for the names.

ink, tap, pan, net, sun, ant

☺ repeat the name several times

☺ refer to the pictures, identify the first sound of each word with students (without letters) by stretched pronunciation

Slide 8 : "ink"

Slide 9 : " tap"

Slide 10: " pan"

Slide 11: " net"

Slide 12: "sun"

Slide 13: " ant"

Slide 14: phonemes one by one: " i, t, p, n, s, a"

Slide 15: phonemes together

****

☺ play phoneme isolation task:

/i/

- I'll say some words, and when you listen a word starts with /i/, you clap your hands. Let's see who's the first one to clap.

cat, pit, happy, tip, it, net, plenty, tap, inn, man, interesting, busy, dip, red, is, sat, tin, funny, nip, ant, ink, rat, lazy, if, nip, India, Italy,

- repeat reading and clap with students

Slide 16 / 17 : it, inn, interesting, is, ink, if , India, Italy

- now I want you to find /i/ in the last sound, e.g. sunny, repeat the list

cat, rainy, pit, happy, tip, it, net, plenty, tap, windy, in, man, busy, dip, red, is, sat, tin, funny, nip, ant, ink, rat, lazy, nip, if

- repeat reading and clap with students

- Slide 18 / 19: sunny, happy, rainy, plenty, windy, busy, funny, lazy
    - explain the /i/ in the last sound is represented by 'y'
    - now can you to think of /i/ in the middle, e.g. 'big'
- Slide 20-24: fish, kitten, pig, bin, dish

Appendix 3.2

Lesson Plan for Session 2

Phonemes

Slides: 1- 6: Revision on /i/

****

/t/

- I'll say some words, and when you listen a word starts with /t/, you clap your hands. Let's see who's the first one to clap.

cat, tell, man, but, tip, get, red, told, dip, out, take, salt, took, rat, talk, want, is, time, pit, try, part, title, pocket,

Slides 7/8 : tip, tell, told, take, took, talk, try, title

- repeat reading and clap with students
- now I want you to find /i/ in the last sound, e.g. cat

cat, man, but, tip, get, red, tell, told, dip, out, salt, take, took, rat, talk, want, is, time, pit, try, part, title, pocket,

- repeat reading and clap with students

Slide 9/10 : cat, but, get, out, salt, rat, want, pit, part, pocket

- now can you tell me the names of the pictures?

Slide 11/ 14 : turtle, star, battery, potato,

****

/p/

- I'll say some words, and when you listen a word starts with /p/, you clap your hands. Let's see who's the first one to clap.

cat, people, net, pick, help, man, pocket, read, problem, cheap, ink, picture, shop, photo, talk, price, sat, pay, dip, pan, is, pit, nip, potato, has, pick,

- Slide 15/ 16 : people, pick, pocket, problem, picture, price, pay, pit, potato, pick

  - repeat reading and clap with students
  - now I want you to find /p/ in the last sound, e.g. cat

cat, gap, man, map, but, tip, get, red, pipe, tell, deep, out, pump, take, damp, rat, talk, tap, stamp

  - repeat reading and clap with students

- Slide 17/ 18 : gap, map, tip, pipe, deep, pump, damp, tap, stamp
- Slide 19/ 22 : policeman, computer, grapes, purple

****

/n/

  - I'll say some words, and when you listen a word starts with /n/, you clap your hands. Let's see who's the first one to clap.

net, tell, dip, tin, never, pick, nephew, pan, it, none, can, talk, needle, sat, an, try, nearly, cat, pay, new, pin, tell, next, profit, sin, now, in, man, neck,

- Slide 23/ 24 : net, never, nephew, none, needle, near, new, next, now

  - repeat reading and clap with students
  - now I want you to find /n/ in the last sound, e.g.

net, dip, tin, pick, pan, it, none, can, thin, need, sat, sun, try, man, cat, ten, new, pin, tell, next, fun, now, spoon,

  - repeat reading and clap with students

- Slide 25/26 : tin pan none thin sun man ten pin fun spoon
- Slide 27/ 30 : snow, snail, gymnastics, dancer

****

/s/

- I'll say some words, and when you listen a word starts with /s/, you clap your hands. Let's see who's the first one to clap.

man, sell, has, him, sit, fat, this, sun, pan, Saturday, was, sing, book, said, now, save, pay, somebody, jobs, soup, class, help, sick, never, still, price

Slide 49/ 50 : sell, sit, sun, Saturday, sing, said, save, somebody, soup, sick

- repeat reading and clap with students
- now I want you to find /s/ in the last sound, e.g.

man, sell, has, him, sit, mouse, this, sun, pan, Saturday, glass, sing, nose, said, face, save, place, soup, class, news, never, still, service

- repeat reading and clap with students

Slide 51/ 52 : has mouse glass nose face place class news service

Slide 53/ 56 : sisters, sausage, horse, basketball

****

/a/

- I'll say some words, and when you listen a word starts with /a/, you clap your hands. Let's see who's the first one to clap.

sell, ant, sit, action, pick, and, sun, accident, new, tap, anything, him, apple, cat, attention, has, another, hand, talk, animals, back,

Slide 39/ 58 : ant action and accident anything apple attention another animals

- repeat reading and clap with students
- now I want you to find /a/ in the middle of the words, e.g. man

many, ant, lamp, action, pick, hat, sun, banana, new, tap, ham, apple, cat, attention, has, another, hand, talk, bank, back,

- repeat reading and clap with students

- Slide 39/ 42 : many lamp hat banana tap ham cat has hand bank back
- Slide 43/ 44 : candle, flag, piano, rabbit
- Slide 45: recap on the 6 sounds

****

Phoneme blending task:

distribute sound cards (printed on a sheet and ask students to cut out)

- ask them to work in pairs, take turns to use the sound cards to create words for their partner to read out. Teacher walk round to check.

distribute a list with words learnt for the 6 sounds

Three blind mice, see how they run!

They all ran after the farmer wife,
Who cut off their tails
with the carving knife,

Did you ever see such fools in your life?
Three blind mice.

Appendix 3.3

Lesson Plan Session 3

Revision

A: rhymes

- read "Three Blind Mice" together
- read out the words and ask students to provide a rhyming word:

cat – fat, bat, hat, sat,
tail – mail, fail, sail
ice - mice, nice, rice, dice
fun – gun, sun, done, none
wife – life, knife,

****

Examples of /i/:

beginning:

Slide 1 - 2 : it, inn, interesting, is, ink, if , India, Italy

ending:

Slide 3 - 4: sunny, happy, rainy, plenty, windy, busy, funny, lazy

middle:

Slide 5 - 6: fish, kitten, pig, bin, dish

****

Part II: phonemes

/t/

- I'll say some words, and when you listen a word starts with /t/, you clap your hands. Let's see who's the first one to clap.

cat, tell, man, but, tip, get, red, told, dip, out, take, salt, took, rat, talk, want, is, time, pit, try, part, title, pocket,

Slide 7 - 8 : tip, tell, told, take, took, talk, try, title

- repeat reading and clap with students
- now I want you to find /t/ in the last sound, e.g. cat

cat, man, but, tip, get, red, tell, told, dip, out, salt, take, took, rat, talk, want, is, time, pit, try, part, title, pocket,

- repeat reading and clap with students

Slide 9 - 10 : cat, but, get, out, salt, rat, want, pit, part, pocket

- now can you tell me the names of the pictures?

Slide 11 - 14 : turtle, star, battery, potato,

****

/p/

- I'll say some words, and when you listen a word starts with /p/, you clap your hands. Let's see who's the first one to clap.

cat, people, net, pick, help, man, pocket, read, problem, cheap, ink, picture, shop, photo, talk, price, sat, pay, dip, pan, is, pit, nip, potato, has, pick,

Slide 15 - 16 : people, pick, pocket, problem, picture, price, pay, pit, potato, pick

- repeat reading and clap with students
- now I want you to find /p/ in the last sound, e.g. cat

cat, gap, man, map, but, tip, get, red, pipe, tell, deep, out, pump, take, damp, rat, talk, tap, stamp

- repeat reading and clap with students

Slide 17 - 18 : gap, map, tip, pipe, deep, pump, damp, tap, stamp

Slide 19 - 22 : policeman, computer, grapes, purple

/n/

- I'll say some words, and when you listen a word starts with /n/, you clap your hands. Let's see who's the first one to clap.

  net, tell, dip, tin, never, pick, nephew, pan, it, none, can, talk, needle, sat, an, try, nearly, cat, pay, new, pin, tell, next, profit, sin, now, in, man, neck,

- Slide 23 -24 : net, never, nephew, none, needle, near, new, next, now

- repeat reading and clap with students

  - now I want you to find /n/ in the last sound, e.g.

  net, dip, tin, pick, pan, it, none, can, thin, need, sat, sun, try, man, cat, ten, new, pin, tell, next, fun, now, spoon,

- repeat reading and clap with students

- Slide 25 - 26 : tin pan none thin sun man ten pin fun spoon
- Slide 27 – 30 : snow, snail, gymnastics, dancer

/s/

- I'll say some words, and when you listen a word starts with /s/, you clap your hands. Let's see who's the first one to clap.

  man, sell, has, him, sit, fat, this, sun, pan, Saturday, was, sing, book, said, now, save, pay, somebody, jobs, soup, class, help, sick, never, still, price

- Slide 31 - 32 : sell, sit, sun, Saturday, sing, said, save, somebody, soup, sick

- repeat reading and clap with students

  - now I want you to find /s/ in the last sound, e.g.

man, sell, has, him, sit, mouse, this, sun, pan, Saturday, glass, sing, nose, said, face, save, place, soup, class, news, never, still, service

- repeat reading and clap with students

- Slide 33 - 34 : has mouse glass nose face place class news service
- Slide 35 - 38 : sisters, sausage, horse, basketball

Phoneme blending task:

distribute sound cards (printed on a sheet and ask students to cut out)

- ask them to work in pairs, take turns to use the sound cards to create words for their partner to read out. Teacher walk round to check.

****

Appendix 3.4

Lesson Plan Session 4

Phonemes

/a/

- I'll say some words, and when you listen a word starts with /a/, you clap your hands. Let's see who's the first one to clap.

  sell, ant, sit, action, pick, and, sun, accident, new, tap, anything, him, apple, cat, attention, has, another, hand, talk, animals, back,

- Slide 1 - 2 : ant action and accident anything apple attention another animals

- repeat reading and clap with students

  - now I want you to find /a/ in the middle of the words, e.g. man

  many, ant, lamp, action, pick, hat, sun, banana, new, tap, ham, apple, cat, attention, has, another, hand, talk, bank, back,

- repeat reading and clap with students

- Slide 3 - 4 : many lamp hat banana tap ham cat has hand bank back
- Slide 5 - 6 : candle, flag, piano, rabbit

- Slide 7 : recap on the 6 phonemes

****

Activity:

Play Go-Fish (with word cards)

- each student have 18 word cards
- play in pairs
- each take turns to ask for a card: e.g. "do you have a word that starts with /i/?" or "do you have a word with /i/ in the middle?"
- the first one to give out all the cards wins

****

1. 💻show the pictures on screen and ask for the names.

   dog, hat, egg cup man rat

2. ➢repeat the name several times

3. ➢refer to the pictures, identify the first sound of each word with students (without letters) by stretched pronunciation

4. 💻show sound cards of d, h, e, c, m, r, and practice these sounds

****

5. play phoneme isolation task (initial and final positions):

/d/

➢I'll say some words, and when you hear a word starts with /**d**/, you clap your hands. Let's see who's the first one to clap.

> ***cat, cold, it, net, dark, tap, date, man, desk, red, is, sad, deep, tin, card, tip, and, ink, rat, bed, hand, dinner***

➢repeat reading and clap with students

💻show: dark, date, desk, deep, dinner, and read the words together

➢now I want you to find /d/ in the last sound, e.g. bird, repeat the list

💻show: cold, red, sad, card, and, bed, hand, and read the words together

➢ now I want you to find /d/ in the middle of a word, e.g. edit

> ***dark, order, red, radio, card, Sunday, deep, video, bed, children, dinner, hundred, student***

****

/h/

➢I'll say some words, and when you hear a word starts with /**d**/, you clap your hands. Let's see who's the first one to clap.

initial position:

hat, but, han, get, red, house, told, head, out, help, sat, take, him, rat, talk, hill, horse, time, home, holiday,

* /h/ does not occur in the final position

➢repeat reading and clap with students

middle position: e.g. behind

hand, behave, help, behind, alcohol, holiday, perhaps, radio,

➢repeat reading and clap with students

****

/**e**/

➢I'll say some words, and when you hear a word starts with /**d**/, you clap your hands. Let's see who's the first one to clap.

initial position:

cat, elephant, hat, everyone, man, effort, read, edge, ink, else, help, talk, extra, pay, examination, pan, home, exit

➢repeat reading and clap with students

middle position: west, set

hand, best, read, never, ink, help, talk, well, pay, yes, home, went, very, right, left

- /e/ does not occur in the final position

****

Appendix 3.5

Lesson Plan Session 5

Revision

/**h**/ - slides 1-7

Read together:

hat, but, han, get, red, house, told, head, out, help, sat, take, him, rat, talk, hill, horse, time, home, holiday,

hand, behave, help, behind, alcohol, holiday, perhaps, radio,

➢repeat reading and clap with students

****

/**e**/ - slides 8-12

Read together:

cat, elephant, hat, everyone, man, effort, read, edge, ink, else, help, talk, extra, pay, examination, pan, home, exit

hand, best, read, never, ink, help, talk, well, pay, yes, home, went, very, right, left

➢repeat reading and clap with students

****

Introduce:

/k/

Slide 13 - 14 : cow, king

- I'll say some words, and when you listen a word starts with /k/, you clap your hands. Let's see who's the first one to clap.

initial position:

net, cat, tell, cow, cup, pick, cut, none, can, king, talk, pay, clock, new, pin, country, next, cross, key, class, kitchen, man, clothes, table, kiss, company

- repeat reading and clap with students

➢ now I want you to find /k/ in the middle of the words

middle position:

cat, fact, local, cup, snooker, class, basket, kiss, record, company, market, country, become, cut, uncle, cow, monkey, soccer

Slide 15 : clock

➢ repeat reading and clap with students

➢ now I want you to find /k/ in the middle of the words

final position:

cat, desk, uncle, week, class, bank, look, monkey, rock, king quick, cup, black, music, kiss, traffic, basic, cow, check, clock,

****

/m/

Slide 16 - 21 : man, mask, map, mushroom, motorcycle

I'll say some words, and when you listen a word starts with /m/, you clap your hands. Let's see who's the first one to clap.

initial postion:

man, sell, market, him, many, fat, monkey, sun, monday, was, must, sing, make, maid, class, may, help, mile, milk, sick, meat, mango, week, mother

➢ repeat reading and clap with students

➢ now I want you to find /m/ in the middle of the words

Slide 22 - 24

middle position:

small, man, woman, many, family, meat, summer, mother, swimming, mango, limit, maid, almost, mile, common, monkey, mummy, market, company, september, december

final position:

form, small, him, many, room, meat, team, woman, film, mother, game, mile, time, limit, home, maid, same, man, freedom, problem

- repeat reading and clap with students

  - now I want you to find /m/ in the middle of the words

****

show the 5 sound cards and recap on the 5 sounds

1. Phoneme blending task:

   distribute sound cards (printed on a sheet and ask students to cut out) + the 6 used in Session 1
   ➢ask them to work in pairs, take turns to use the sound cards to create words for their partner to read out. Teacher walks round to check.

2. distribute a list with words learnt for the 5 sounds

3. Dictation (on the back of the list):

The dog has a hat on its head. It comes into the kitchen to eat an egg. The woman also gives it a cup of milk.

Appendix 3.6

Lesson Plan Session 6

Nursery Rhyme:

- Slide 1-2 : Pussy Cat
- Read the rhyme several times in class.
- Highlight the rhyming words
- Ask for more words to rhyme with "queen", "there"

****

Revision:

initial phonemes –/k/, /p/, /r/, /b/, /m/, /o/, /t/,

- Slides 3 – 9: show pictures on ppt and ask for first sound

1. picture cards (for phoneme identification and segmentation):
   - distribute picture cards
2. Ss work in pairs and ask each other: do you have a word that begins (ends) with /k/?

****

Introduce:

/ch/

- Slides 10 - 13 : show pictures of "cherry", "chili", "chick"
- I'll say some words, and when you listen a word starts with /ch/, you clap your hands. Let's see who's the first one to clap.

Initial position:

- Slides 14 :

check, church, chalk, Chinese, children, chicken, cheese, cheap, change, chair, charge

- repeat reading and clap with students

Middle and final positions:

- Slides 15 :

teacher, butcher, purchase, future, nature, furniture, church, speech, page, change, charge

➢ repeat reading and clap with students

****

/s/

Slides 17 - 19 : show pictures of "scissors", "sausage", "sisters"

Initial position:

Slides 20 :

Six, sad, sand, song, soup, soft, sick, speak, snow, stamp, slope, snail, street, scream

➢ repeat reading and clap with students

Middle and final positions:

Slides 21 - 22:

nose, mouse, class, news, face, service, has, glass, place,

➢ repeat reading and clap with students

****

Introduce consonant clusters:

Slides 23 - 28: scale, skull, star, cloud, snail, spaghetti

➢ repeat reading

Play phoneme deletion game:

➢ Ask students to deletion the first phoneme in the clusters

****

Appendix 3.7

Lesson Plan Session 7

Revision:

Slides: 1 – 15

Ask for initial phonemes of the name of the pictures.

phoneme blending game

distribute more phoneme cards

****

Introduce:

/r/

Slides 16 - 22 : show pictures of "rabbit", "rose", "roller-stating", "carrot", "crab", "frog"

- Identify the common sound in these words.
- Invite students to more examples with /r/ sound.

****

/o/

Slides 23 - 26 : show pictures of "orange", "octopus", "oven

Slides 27 : ***ox, oxygen, office, operator, orphan***

- Identify the common sound in these words.
- Invite students to more examples with /o/ sound.

****

Activity:

Phoneme blending game:

- Given out new sound cards, and ask each group of students to create as many words as they can sound out. The group with the most words will win

****

Appendix 3.8

Lesson Plan Session 8

Revision:

1. first phoneme bingo

   - students are given bingo cards with letters on it.
   - Teachers read out words
   - Students cross out the first phoneme of the word they heard
   - The first one to get a straight line will win.

2. Word recognition exercise

   - Students are given a list of similar looking words.
   - Teacher read out some words.
   - Students mark the word the hear.

****

Introduce:

/oi/

Slides 1 - 5 : blending exercise

- Students are asked to blend the consonants before and after /oi/ to form words.

****

/ou/ and /ow/

Slides 6 - 12 : blending exercise

- Students are asked to blend the consonants before and after /oi/ to form words.
- Students are invited to suggest other words to add to the list.

****

Activity:

Spelling exercise

- Students are given some sentences with blanks to fill.
- Teacher read out the whole sentence.
- Students write down the missing word in the blank.

****

Appendix 3.8

Word recognition exercise

1.	grab	glum	grin	
2.	slop	slam	slim	slug
3.	trim	trad	trip	tram
4.	risk	rusk	desk	tusk
5.	crest	crust	crisps	
6.	just	rust	trust	
7.	stop	stub	stun	
8.	flags	flats	flaps	
9.	plot	plop		
10.	exist	insist	exam	
11.	slush	splash	thrush	
12.	felt	left	lift	
13.	held	help		

PAGE

NUMBERING

AS ORIGINAL

Spelling exercise

1. He _____ to work by bus.
2. It is my _____ to be _____.
3. Sam is in the _____ class as me.
4. The _____ pats the horse's _____.
5. This plum isn't _____.
6. A fish has _____; just _____ for fish.
7. I must _____ with this ticket, the prize is some fine white _____.
8. This is in _____; I don't understand it.
9. I _____ you can come.
10. Don't _____, he'll be back.

Appendix 3.9

Lesson Plan Session 9

Revision:

1. blending exercise on /oi/, /ou/ and /ow/

💻 Slides 1 - 10 : blending exercise

2. phonemes bingo

   - students are given bingo cards with letters on it.
   - Teachers read out words
   - Students cross out the first phoneme of the word they heard
   - The first one to get a straight line will win.

3. read aloud

💻 Slides 11 - 24 : read aloud word lists

4. revision on /e/

💻 Slides 25 - 28 : blending exercise with /e/

****

Introduce: long vowels

/ee/

💻 Slides 29 - 32 : blending exercise

- Students are asked to blend the consonants before and after /ee/ to form words.
- Students are invited to suggest other words with /ee/.

💻 Slide 33: contrast /e/ with /ee/

****

/a-e/, /i-e/, /o-e/

💻 Slides 34 - 37 : contrasting short and long vowels

- Students are asked to read aloud the word lists.
- Students are invited to suggest other words to add to the list.

****

Activity:

Word recognition exercise

- Students are given a list of similar looking words.
- Teacher read out some words.
- Students mark the word they hear.

****

Word Recognition exercise

1. Tom can (jump, grump, stump) up the step.
2. I have (camp, cramp, clamp) in my left leg.
3. Let's sit on the (clench, bench, wrench) at the bus stop.
4. It's difficult for the van to run up the (ramp, stamp, lamp).
5. I cannot (bend, lend, mend) you the money.
6. I can stand on my (hands, bands, sands).
7. We went in the wet (bud, mud, mad) and the (hand, band, sand).
8. Can you (paint, print, plain) this for me?
9. Jim is bad to (pinch, print, punch) and (pinch, print, punch).
10. I must be (mud, mad, mid) to spend so much money.
11. I cannot stand this (damp, dump, stamp) place.
12. He had a (lump, dump, stump) on his chin and a (cut, cat, cart) on his left hand.
13. Please get a (stand, stamp, trump) from that shop.
14. To (camp, came, clamp) is fun, but we must have a (tent, lent, sent).
15. My friend in England has (blend, blond, bland) hair.

Appendix 3.10

Lesson Plan Session 10

Revision:

1. blending exercise on /oi/, /ou/ and /ow/

💻 Slides 1 - 10 : blending exercise

2. phonemes bingo

   - students are given bingo cards with letters on it.
   - Teachers read out words
   - Students cross out the first phoneme of the word they heard
   - The first one to get a straight line will win.

3. read aloud

💻 Slides 11 - 24 : read aloud word lists

4. revision on /e/

💻 Slides 25 - 28 : blending exercise with /e/

****

Introduce: long vowels

/ee/

💻 Slides 29 - 32 : blending exercise

- Students are asked to blend the consonants before and after /ee/ to form words.
- Students are invited to suggest other words with /ee/.

💻 Slide 33: contrast /e/ with /ee/

****

/a-e/, /i-e/, /o-e/

💻 Slides 34 - 37 : contrasting short and long vowels

- Students are asked to read aloud the word lists.
- Students are invited to suggest other words to add to the list.

****

Activity:

Word recognition exercise

- Students are given a list of similar looking words.
- Teacher read out some words.
- Students mark the word they hear.

****

1. He _____ to school by bus.
2. It is my _____ to fat.
3. _____ is in the _____ class as me.
4. The _____ pats the horse's _____.
5. This _____ is _____, it must be very _____.
6. A _____ has _____ ; just _____ for it.
7. I must _____ with this lucky draw, the prize is some _____ white _____.
8. This is written in secret _____, I can't understand it.
9. I _____ you can _____ to my house for my birthday party.
10. Tom can _____ up the steps.
11. We went in the _____ _____ and the _____.
12. Jim is bad to _____ and _____ his classmates.
13. I cannot _____ this _____ place.
14. To _____ is fun, but we must have a _____.
15. Let's _____ on the _____ at the bus stop.

Appendix 3.11

Lesson Plan Session 11

Activities:

1. spelling with pictures

Slides 1 - 24 : short vowels, long vowels, consonants and consonant blends

- Students are given the printout of slides 1-24. Some consonants and vowels are missing.
- The whole class read the names of the pictures together.
- Students are asked to fill in the blanks with consonants or vowels.

2. read aloud

Slides 25 : list of answers of slides 1-24, but without pictures

- Students are asked to read aloud the words and repeat the highlighted phonemes.

****

3. read alond – contrast of long and short vowels

Slides 26 - 27 : list of word pairs

- Students are asked to read aloud the word pairs and repeat the long and short vowels in each word pair.

****

4. read aloud – new words

Slides 28 : list of unfamiliar words

- Students are asked to sound out the unfamiliar words.

****

5. spelling exercise

Handout 1:

Students are asked to fill in the missing phonemes in each word.
Audio input from teacher.

****

6. spelling in text

Handout 2:

- Students are asked to fill in the missing word in text.
- Audio input from teacher.

****

7. word recognition – contrasting vowels

Handout 3: students identify the word read by the teacher.

****

8. word recognition – contrasting long and short vowels

Handout 4: students identify the word read by the teacher.

****

9. rhyme matching with pictures

Handout 5: students are asked to match names of pictures that rhyme to each other.

****

Handout 1: spelling

1. w _ n _

1. _ _ erry

2. _ rrows

3. r _ bb _ t

4. s _ ar

5. c _ _ b

6. _ _ topus

7. _ ven

8. s _ _ le

9. _ l _ phant

10.k _ tten

11.m _ p

12._ ur _ le

13._ _ oon

14._ o _ itor

Handout 2: Spelling in text

Fill in the blanks. The words on dotted line should give you some hints.

---

1. It is such a _____ to buy crabs in the shops when it is so hot.
2. The fish went flip _____ on the slap.
3. Mum has the _____ flan, and Dad has the rum, so we can have _____.
4. It is best to be slim and _____.
5. Alfred drops the cash with a _____.
6. Tom _____ the dog without his brother's help.
7. Can we go to the _____ to get the foldable bed.
8. Ben took out his gun from the _____ and clean it with the best cloth.
9. _____ me, I won't left it in the wet and left it rust.
10. When Tim made a _____ into the water, his brother took a photo for him with a flash.
11. I _____ wearing a hat.
12. If you put a tape on the _____, no water will come out.
13. He has a new hair cut, and he looks _____.
14. Don't _____ at me. I don't have stars on my face.
15. You are late for the _____ that we made.

16. _____ 17. _____ 18. _____

19. _____ 20. _____

Handout 3: Word recognition exercise – contrasting vowels

1. scrap	scrag	scrape	scap
2. grape	grap	gap	trap
3. fake	fak	lake	bake
4. bale	ball	tale	pale
5. stall	stale	still	stoll
6. hop	hope	mop	pope
7. tile	till	file	tale
8. spin	spine	spain	span
9. plum	plume	plan	prum
10.pure	pour	poor	sure
11.fare	far	fore	fire
12.shut	shot	shoot	short
13.chest	chess	check	chase
14.sheep	ship	shop	sheet
15.score	scare	scar	scold
16.coy	boy	toy	foy
17.soil	boil	boy	foil
18.clown	brown	town	round
19.pace	place	face	lace
20.stick	stock	slick	stuck

Handout 4: Word recognition exercise – contrasting long and short vowels

1. mad	made
2. can	cane
3. man	mane
4. till	tile
5. cap	cape
6. hop	hope
7. tap	tape
8. fuss	fuse
9. hat	hate
10.bit	bite
11.fat	fate
12.slid	slide
13.cut	cute
14.mat	mate
15.rat	rate
16.win	wine
17.cod	code
18.not	note
19.rod	rode
20.tub	tube

IMAGES REDACTED DUE TO THIRD PARTY RIGHTS OR OTHER LEGAL ISSUES

Appendix 3.12

Lesson Plan Session 12

Activities:

1. read aloud – contrasting onset and rime

Slides 1 : list of word pairs with matching rimes

- Students are asked to read aloud the words and repeat the onset and rime in each word pair.

****

2. read aloud – with pictures

Slides 2 - 25 : pictures and words, highlights rime patterns.

- Students are asked to read aloud the words and repeat the rimes.

****

3. rhyme matching – with pictures

Handout 1:

- students are asked to match the names of the pictures that rhyme to each other.

****

4. Spelling based on analogy

Slides 26 : students are given a printout and are asked to write down the word based on the teacher's input and the word given.

****

5. rhyme matching – word ballons

Handout 2:

- Students are asked to match the rhyming words

****

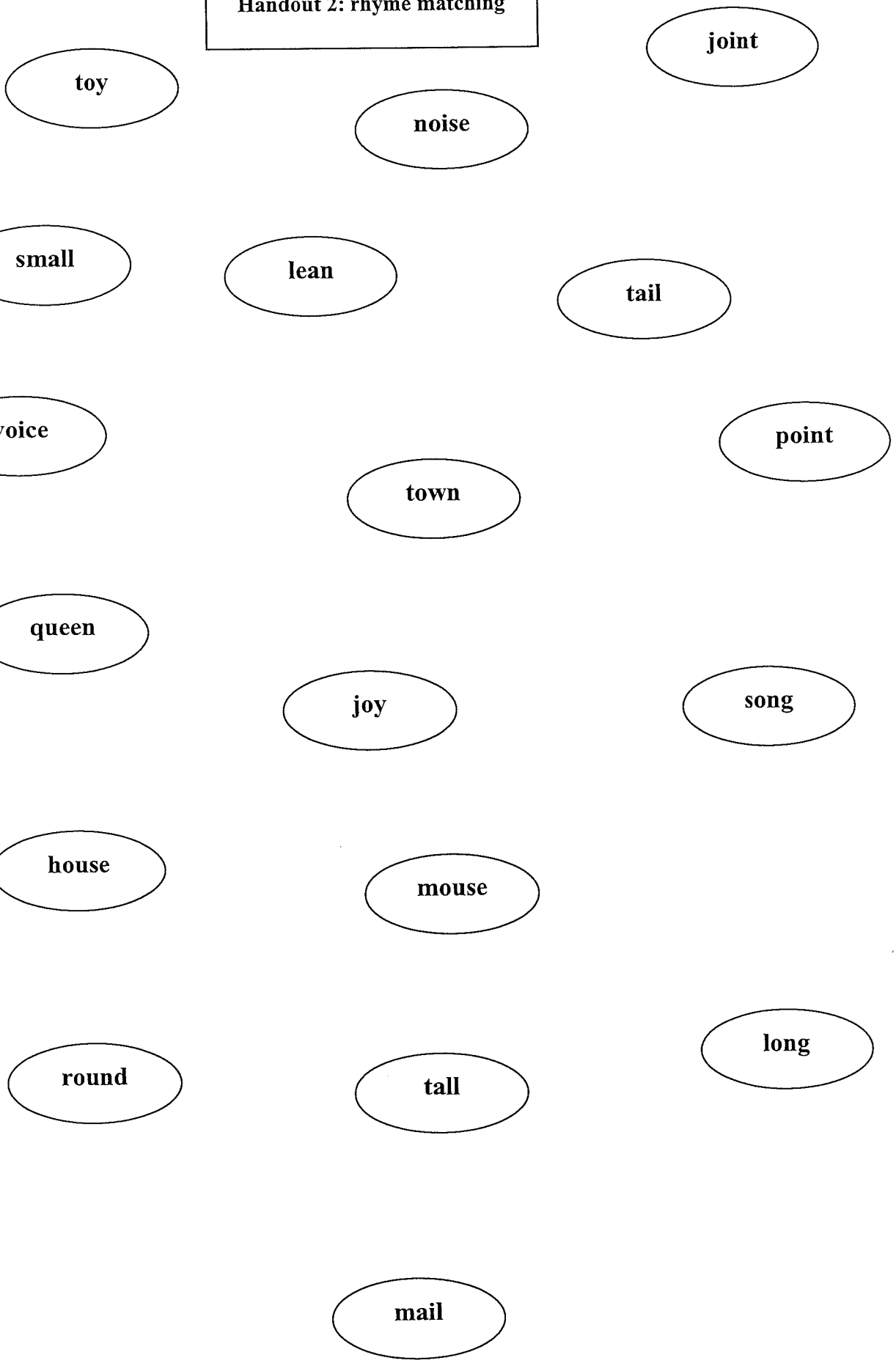
6. rhyme matching – pictures

Handout 3: students are asked to match names of pictures that rhyme to each other.

****

IMAGES REDACTED DUE TO THIRD PARTY RIGHTS OR OTHER LEGAL ISSUES

Handout 2: rhyme matching



IMAGES REDACTED DUE TO THIRD PARTY RIGHTS OR OTHER LEGAL ISSUES

Appendix 4 Training Materials for Control Group in Study II

Page

Appendix 4.1

Lesson 1 – Let's Know Each Other

Duration: 60 mins

Target Students: Form 1

Procedures

	Teacher's actions	**Language used**	**Time Required**
1	T introduces herself/himself to the Ss.	• "I am …" • "I live with my…" • "I live in…" • "I have…brother(s)/ and…sister(s)." • "I like…"	5 mins
2	T shows a photograph and tells the Ss that the person is his/her friend. T introduces his/her friend to the Ss.	• "He/She is…" • "He/She lives with his/her…" • "He/She lives in…" • "He/She has …brother(s)/ and…sister(s)." • "He/She likes…"	5 mins
3	T delivers worksheets to the Ss and asks them to work in pairs. T introduces the questions to the Ss for the later interview.	• "What's your name?" • "Who do you live with?" • "Where do you live?" • "Have you got any brother or sister?" • "What's your hobby?"	10 mins
4	T asks the Ss to interview their partners and complete their worksheets (Worksheet 1a).		5 mins
5	T asks the Ss to come out and introduce their partners to other classmates individually. T reminds the Ss to beware of the change of tenses (posts a poster with necessary language items on the board) (Worksheet 1b).	• "My partner's name is…" • "He/She lives with his/her…" • "He/She lives in…" • "He/She has …brother(s)/ and…sister(s)." • "He/She likes…"	30 mins
6	T asks the Ss to write a short introduction about their partners.		5 mins

Worksheet 1a

Partner's name: _____

Place you live	
People you live with	
Number of brothers (if none, put a 'X')	
Number of sisters (if none, put a 'X')	
Hobby	

Partner's name: _____

Place you live	
People you live with	
Number of brothers (if none, put a 'X')	
Number of sisters (if none, put a 'X')	
Hobby	

Partner's name: _____

Place you live	
People you live with	
Number of brothers (if none, put a 'X')	
Number of sisters (if none, put a 'X')	
Hobby	

Partner's name: _____

Place you live	
People you live with	
Number of brothers (if none, put a 'X')	
Number of sisters (if none, put a 'X')	
Hobby	

Worksheet 1b

My partner's name is …

He/She lives with his/her…

He/She lives in…

He/She has …brother(s) / and …sister(s).

He/She likes…

Appendix 4.2

Lesson 2 – Giving Directions

Duration: 60 mins

Target Students: Form 1

Procedures

	Teacher's actions	**Language used**	**Time Required**
1	T posts a big map on the board. T introduces a conversation (Worksheet 1) to the Ss by using the map.		5 mins
2	T makes use of the map and introduces some useful language items to the Ss. T writes the useful language items on the board. T asks some Ss to give directions by making use of the posted map.	• e.g. " X is opposite…" • "X is behind…" • "X is near…" • "X is on your left/right." • "X is on the first/second turning on the right/left." • "X is between the…and the…" • "X is on…Street." • "X is on the corner of …Street and…Street."	20 mins
3	T asks the Ss to work in pairs(A & B). T delivers different maps (Worksheet 2&3 with instruction) to A & B and reminds them not to read their partners' maps. T gives instruction to the Ss and asks them to start.		20 mins
4	T asks the Ss to check if they can write the places on their maps correctly. T asks several groups to come out and do the role play.		10 mins
5	T revises the language items with Ss.		5 mins

Worksheet 1

A: Excuse me. How do I get to Nathan Road?

B: Walk along Salisbury Road. It's on the fourth turning on the left.

A: Can you tell me the way to the Hong Kong Space Museum, please?

B: Yes, walk along Salisbury road. You'll see it on your right.

A: Can you tell me the way to Omni The Hong Kong Hotel, please?

B: Take the first turning on the left, and it's behind Star House.

Worksheet 2 (Candidate A)

Here is a map. There are several buildings that you do not know where they are. Take the Car Park as a starting point and ask your partner to give directions. Fill the names of the buildings in those blank boxes. Here are the places that you need to find out their locations:

1. USA restaurant
2. Hong Kong Bank
3. Supermarket
4. Bus Terminal
5. Library

Worksheet 3 (Candidate B)

Here is a map. There are several buildings that you do not know where they are. Take the Car Park as a starting point and ask your partner to give directions. Fill the names of the buildings in those blank boxes. Here are the places that you need to find out their locations:

1. MTR Station
2. Church
3. McDonald's
4. China Bank
5. Coffee Shop

Appendix 4.3

Lesson 3 – Can you draw the picture?

Duration: 60 mins

Target Students: S. 1

Procedures

	Teacher's actions	**Language used**	**Time Required**
1	T shows a pictures to the Ss and introduces the shapes to the Ss by asking questions. *(Draw the shapes on the board).* T drills the Ss.	*Shapes: square, rectangle, triangle, circle, star & diamond.* • "What is it?" • "It is a square."	5 mins
2	T shows a description of another picture to the Ss. T tells the Ss to pay attention on the words which tells the drawing procedures. T asks the Ss to help him/her to draw the pictures on the board. T then underlines and introduces the prepositions.	*"First, now, next, after that, finally."* • e.g."Where should I put the square?" • "Where should I put the circle?" • "What's next?"	5 mins
3	T delivers papers to the Ss. T asks the Ss to listen to the description of a picture draw the picture on their own papers. *(Don't show the description to the Ss.)* T asks some of the Ss to draw their own pictures on the board simultaneously. T shows the OHT 3 to the Ss and checks if the pictures are correct.		15 mins
4	T then asks the Ss to work in pairs (Student A & student B). T reads out the instruction		25 mins

	and demonstrates. T reminds the Ss to use the words to give the drawing procedures. T delivers different pictures to Student A and Student B and reminds them do not let others see the pictures. T asks the Ss to start.	*"First, now, next, after that, finally."*	
5	T asks the Ss to put up their hands if they can get the same picture. T asks some of the pairs to come out and demonstrate.		10 mins

Appendix 4.4

Lesson 4 – School Rules

Duration: 60 mins

Target Students: Form 1

Procedures

	Teacher's actions	**Language used**	**Time Required**
1	T asks the Ss to tell some of the school rules they need to obey in their school and write them on the board. (If they cannot think of any, ask them to take out their Ss' Handbook and give examples.)		3 mins
2	T asks the Ss if they agree with the rules and ask them to make suggestions for improvement. T then take this chance to introduce some useful expressions for discussion to Ss.	e.g. "I (strongly) agree with you." "I think so." "I agree with you but… "I disagree that…" "I don't think so." "I think it'd be better if…" "What's your opinion?" "What do you think?" "Why don't we…" etc.	10 mins
3	T delivers a sheet of school rules (Appendix 1) to the Ss and ask them to indicate "agree" or "disagree" or "needed to be improved" by putting a tick (√). (T reminds the Ss not to discuss with other classmates.)		3 mins
4	T assigns a number to each Ss (1-4) and then asks the Ss who have the same number to group together.		2 mins
5	T delivers the sheet of instruction to each group and describe the activity to them.		3 mins
6	T asks the Ss to start the discussion.		20mins
7	T asks each group to report and introduce their new school rules.		19mins

Worksheet 1

Rules	Agree	Disagree	Needed to be improved
1. Always refer to a teacher title and last name: Mr Chan, Mrs Wong, Miss Cheung (never call a teacher "Teacher").			
2. Arrive to school on time or a little early.			
3. Raise your hand when you want to ask a question.			
4. You should speak to the teacher from your desk while you are stood up.			
5. When you are absent, you must make up the work you have missed. Ask either the teacher or a classmate for the work.			
6. If you expect to be away from school because of an emergency, tell your teacher in advance and ask for the work you will miss.			
7. All assignments you hand in must be your own work.			
8. Never cheat on a test, quiz, exam and dictation.			
9.If you are having difficulty with a class, schedule an appointment to see the teacher for help. The teacher will be glad to help you.			
10. Student must bring a note from a parent explaining any absence or tardiness.			
11. The only acceptable excuse for absence is personal illness, a death in the family, or a religious holiday. It is illegal to stay home from school for any other reasons.			
12. When a teacher asks a question and does not name a particular student to answer it, anyone who knows the answer should raise one hand.			
13. Do not talk to other classmates in class unless you get the permission of the teacher.			

Worksheet 2

Discuss the school rules with your group members and see if the point of view of all of you are the same. After the discussion, invent two new school rules with your group members and write them down. You will need to report to the whole class after finishing the activity. Here are some questions which may help for the discussion:

- Which rule is the most useful one?
- Which rule(s) is/are required to be abandoned?
- How would you improved those rules which are "needed to be improve"?
- Why do you invent those two new rules?

1. If you are one of the students in this school, are you happy with the school rules?

Appendix 4.5

Lesson 5 – What are you going to do?

Duration: 60 mins

Target Students: Form 1

Procedures

	Teacher's actions	**Language used**	**Time Required**
1	T shows a diary on the board (OHT 1). T tells the Ss what John is going to do according to the diary. T writes the sentences on the board. T revises the vocabulary items with the Ss.	• "John is going to…on Monday." • "He is going to…on Tuesday."	5 mins
2	T delivers a passage (Worksheet 1) to the Ss and asks them to read the passage silently. T tells the Ss that they will have to fill in a diary after reading the passage. T shows a blank diary (OHT 2) and asks the Ss questions *(writes the question on the board)* in order to complete the diary.	• "What is Mary going to do on Sunday / Monday / Tuesday / Wednesday / Thursday / Friday / Saturday? • "She is going to…on _____."	10 mins
3	T asks the Ss what they usually do in order to brainstorm more ideas for the following activity.	• "What do you usually do after school?" • "What do you do in your spare time? • "What do you usually do on holidays?" etc. OR • "Is there any activity that you don't know how to say in English?"	10 mins
4	T delivers a blank diary (Worksheet 2) to Ss and asks them to work in pairs. T gives the instruction about the activity (OHT 3) and demonstrates it.	• "What are you going to do on Sunday / Monday / Tuesday / Wednesday / Thursday / Friday / Saturday?" • "I'm going to…on _____."	10 mins

5	T asks the Ss to question each other and help him/her to complete his/her diary.		10 mins
6	T asks some pairs to come out and demonstrate the conversations. T asks other Ss to pay attention to the diary of their classmates and tells them they need to answer some questions about the conversation.	• "What is (student's name) going to do on Sunday / Monday / Tuesday / Wednesday /Thursday / Friday / Saturday?"	15 mins

OHT 1

John's Diary

Sunday	Visit Aunt Susan and Uncle Bob
Monday	Tidy my bedroom
Tuesday	Take some books back to the library
Wednesday	Cook a meal for my family
Thursday	Swimming
Friday	Look after my cousin, Tony, who is three years old
Saturday	Go to the Ocean Park

Worksheet 1

Mary is a hard-working girl. She is a Form 1 student and she studies in the ACG Secondary School. She likes reading a lot and she goes to the library on Mondays. She usually goes to the swimming pool on Tuesday, but she is not going there on the coming Tuesday because the swimming pool is closed for the renovation. Therefore, she is going to stay at home. On Wednesday, she has a violin lesson with Mr Cow in Talent Music Shop. She is going to take her puppy to have a body check on Thursday. On Friday, she is going to see a film with David. She usually goes to the youth centre to play chess with her friends on Saturdays. On Sundays, she always goes to the chinese restaurant with her family in the morning and they go shopping together in the afternoon.

OHT 2

Mary's Diary

Sunday	
Monday	
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	

Worksheet 2

Partner's name: _____

Sunday	
Monday	
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	

Partner's name: _____

Sunday	
Monday	
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	

OHT 3

Instruction

Work in pairs (Student A and Student B). Students in each pair take turn in asking and answering questions. Begin by completing Student A's diary. Student B asks questions about Student A's week and helps Student A to write what he/she is going to do. Swap roles to complete Student B's diary.

Language used

"What are you going to do on Sunday / Monday / Tuesday / Wednesday / Thursday / Friday / Saturday?"

"I'm going to…"

Appendix 4.6

Lesson 6 – What job do I do?

Duration: 60 mins

Target Students: Form 1

Procedures

	Teacher's actions	**Language used**	**Time Required**
1	T divides the Ss into 2 groups and asks them to move away the desks and sit like a big circle.		2 mins
2	T asks an individual students what his/her job is. T asks other Ss what the duties and characteristics of being a student. T introduces different jobs to the Ss with the use of pictures. *(T sticks the pictures on the board.)* T asks the Ss to think of the duties and some characteristics of each job. The teacher then write the Ss' answers below each picture.	e.g. "What's your job?" "What do you need to do?" "Where do you work?" "What clothes do you wear?" "Do you earn a lot of money?" etc. e.g. "What does he/she needs to do?" "Where does he/she work?" "How much does he/she earn?" "What clothes does he/she wear?" etc.	15 mins
3	T tells the Ss that they are going to play a guessing game about occupations. T gives a bag (Worksheet 1) to each group. T asks the Ss to pass the bag around and each of them should draw a paper from the bag. T reminds the Ss not to show their own papers to others. T gives instruction (Worksheet 1) and asks the Ss to start.		25 mins

4	T asks who can guess most of the jobs in each group. T asks each group to choose a job that they think is the most difficult/the easiest to guess and why.		5 mins
5	T asks the Ss to take turn and tell the whole class which job they like most and give reasons.	• "I like to be a … because…"	13 mins

Worksheet 1

Each of you students should have a paper with a job written on it. You should not show it to others. Each of you has to take turn and let other group members guess what your job is. You can ask maximum **20 questions** for each job. **The questions are restricted to the "Yes/No" type.**

Here are some examples of the "Yes/No"-typed questions:

- "Do you earn a lot of money?"
- "Do you need to wear uniform?"
- "Is your job hard?"
- "Do you work indoors/outdoors?"

When you have finished guessing all the jobs, put up your hand.

Appendix 4.7

Lesson 7 – Story Telling

Duration: 60 mins

Target Students: Form 1

Procedures

	Teacher's actions	**Language used**	**Time Required**
1	T delivers small paper folders to the Ss and asks them not to show the folders to others. (Worksheet 1) T asks the Ss to look inside the folders and there should be a coloured sheet. T reminds the Ss not to show the coloured sheet to others.		1 mins
2	T asks the Ss to find out other classmates who have the same coloured sheet as theirs. T reminds the Ss that they should not mention the colour of the sheet when they ask question. T asks the Ss who have the same coloured sheet to sit together. (T tells the Ss that there should be 5 persons in a group.)	e.g. "Have you got a sheet which is the colour of grass/sky?"	5 mins
3	T shows a set of pictures (Worksheet 2a) and tells a short story (Worksheet 2b) with making use with the pictures. T delivers an envelope to each group and asks the Ss to check if there are 5 pictures and a sheet with instruction and vocabulary items inside (Worksheets 2a-d). T then gives instruction (Appendix 4) and asks the Ss to start writing a story.		5 mins 27 mins
4	T asks each group to come		20 mins

	out to tell the story to the whole class with showing the pictures *(Worksheet 3). (The Ss are advised not to refer to their notes or written work.)*		
5	T asks the Ss to vote for the most interesting story and give reasons why the story is interesting.		2 mins

Worksheet 1

(Picture 1) One day, Paul and Bob were talking about sports activities. Paul told Bob that he was good at swimming and he could swim faster than a boat.

(Picture 2) Bob also said that he was good at swimming too and he could swim faster than a ferry.

(Picture 3) Then Paul said that there would be a cross-harbour swimming race tomorrow. He suggested to swim across the harbour and see if he or Bob was faster and stronger.

(Picture 4) On that day, there were many people swam in the cross-harbour race. Some of them were young and some were old.

(Picture 5) At the end of the race, both Paul and Bob were good at swimming. They swam better than many people but an old man won the race.

Worksheet 2 (Group A)

You are required to make up a story by using the pictures. You are advised to write the story together (At least 3 sentences for each picture). Each group member is responsible for one picture during the presentation. You can arrange the pictures in any order you like and the list of vocabulary items is for reference only. You are free to decide the names of the character, the place and the ending.

You can jot notes and write a framework.

Past Tense should be used.

Here is the list of vocabulary items: (each item can be used more than once)

get married	salesperson
jacket	money
small	party
laugh	new
shop	happy
clothes	dollars
friends	bought

Worksheet 2 (Group B)

You are required to make up a story by using the pictures. You are advised to write the story together (At least 3 sentences for each picture). Each group member is responsible for one picture during the presentation. You can arrange the pictures in any order you like and the list of vocabulary items is for reference only. You are free to decide the names of the character, the place and the ending.

You can jot notes and write a framework.

Past Tense should be used.

Here is the list of vocabulary items: (each item can be used more than once)

grandpa	kind
person	money
coke	shop
buy	youngest
family	cute
naughty	homework
busy	thirsty

Worksheet 2 (Group C)

You are required to make up a story by using the pictures. You are advised to write the story together (At least 3 sentences for each picture). Each group member is responsible for one picture during the presentation. You can arrange the pictures in any order you like and the list of vocabulary items is for reference only. You are free to decide the names of the character, the place and the ending.

You can jot notes and write a framework.

Past Tense should be used.

Here is the list of vocabulary items: (each item can be used more than once)

arrived	early
homework	half past seven
watched TV	funny show
bus-driver	fast
late	a quarter past eight
get up	tired

Worksheet 2 (Group D)

You are required to make up a story by using the pictures. You are advised to write the story together (At least 3 sentences for each picture). Each group member is responsible for one picture during the presentation. You can arrange the pictures in any order you like and the list of vocabulary items is for reference only. You are free to decide the names of the character, the place and the ending.

You can jot notes and write a framework.

Past Tense should be used.

Here is the list of vocabulary items: (each item can be used more than once)

go home	flew
kite	played
slide	happily
park	naughty
tired	slept well
sunglasses	lunch
sun	bright
woke up	night

Worksheet 3

You are required to make up a story by using the pictures. You are advised to write the story together (At least 3 sentences for each picture). Each group member is responsible for one picture during the presentation. You can arrange the pictures in any order you like and the list of vocabulary items is for reference only. You are free to decide the names of the character, the place and the ending.

You can jot notes and write a framework.

Past Tense should be used.

Appendix 4.8

Lesson 8 – If..., what would you do?

Duration: 60 mins

Target Students: Form 1

Procedures

	Teacher's actions	Language used	Time Required
1	T shows a dialogue (OHT 1) and reads it. T divides the Ss into two groups and asks them to take up the roles in the dialogue and read it. *(Swap roles)* T asks some comprehension questions (Worksheet 1) about the dialogue. *(Write the answers on the board.)* T introduces the sentence pattern to the Ss.	• "If..., what would you do?" • "I would..."	15 mins
2	T asks the Ss some conditional questions (OHT 2) so that the Ss can practise the sentence pattern.		10 mins
3	T asks the Ss to work in groups of four. T gives the instructions (OHT 3) and demonstrates. T delivers worksheets (Worksheet 2) to the Ss to fill in their own answers *(OHT 3)*. T then asks the Ss to start the group activity.		25 mins
4	T asks the Ss if they have got similar answers with their partners. T asks some Ss to gives the answers.		10 mins

OHT 1

Susan and Jane are used to be very good friends. However, they ended up the relationship because Susan told the teacher that Jane had cheated in the exam. Susan is now talking to his sister, Annie, about her relationship with Susan recently.

Annie: You look upset, Susan. What's the matter?

Susan: Jane still takes no notice on me. Whenever I talk to her, she always ignores me. Should I tell the teacher that Jane has cheated in the exam?

Annie: Come on, I think you did it right. If Jane really treats you as a very good friend, she would understand you and be nice to you. Just give her some time. By the way, if you were Jane, what would you do?

Susan: …Perhaps I would act like her. I would also feel frustrated about my best friend. But I can't stand the way she treats me. All my classmates are discussing. Some of them said that I'm not good. I betray my best friend and they ask others to beware of me.

Annie: I'm sure you still have some supporters, right? What would you do if they say bad things about Jane in front of you?

Susan: I would tell them there may be some problems which drive Jane to do that. I would also ask them not to look down on her and forgive her.

Annie: That's it! Perhaps Jane would not listen to those "bad things", but listen to those "good things" about you.

Susan: Yeah, maybe.

Worksheet 1

1. How many persons are there talking in the dialogue?
2. Why was Jane angry with Susan?
3. How did Jane treat Susan?
4. According to Annie said, what would Jane do if she really treats Susan as a very good friend?
5. If Susan were Jane, what would she do?
6. What did Susan's classmates think about her?
7. What would Susan do if she hears bad things about Jane?
8. How is Susan's attitude towards the relationship between Jane and her?

OHT 2

1. If you see a child who has lost his/her way, what would you do?
2. If your mother does not allow you to go out to play, what would you do?
3. If there is a stranger who is following you, what would you do?
4. If you get very low marks in the English test, what would you do?

OHT 3

Work in groups of four.

Student A and B are partners and Student C and D are partners. You are conducting a class survey about friends and friendship. You have to ask your partner questions about his/her ideas of friendship and talk about you own view of friendship.

Each of you will receive a worksheet. Note down your own answers on the worksheet first.

Then, ask your partner the questions and write down his/her answers. Your partner will ask you the same questions and you have to give the answers you have noted down.

After you have finished, join up with the other pair of students (Student C &D) in your group. Student A asks Student C about Student D's answers. Use the questions given in the worksheet. You will have to change the form of the questions slightly.

e.g. If (Student D's) friend asked him/her to lend him/her HK$100, what would (Student D) do?

Student A should write down the information Student C gives on the back of the worksheet. Student C will then ask Student A about Student B's answers. When giving answers, you will have to change the form of the questions slightly.

e.g. If (Student B's) friend asked him/her to lend him/her HK$100, (Student B) would...

In a similar way, Student B asks Student D about Student C's answers and Student D asks Student B about Student A's answers.

Using the answers, Student A tells Student D and Student B tells Student C the information they have just received to check if it is correct. Begin in the following way.

(Student's name) has told me some of your ideas about friendship. Can you tell me if my information is correct? If your friend asked you to lend him/her HK$100, you would...

Student C and Student D should listen to the information and say whether it is correct. Student C and Student D will then ask Student A and Student B respectively to confirm the information they received about them.

Worksheet 2

1. If your friend asked you to lend him/her HK$100, what would you do?

Your answer: If my friend asked me to lend him/her HK$100, I would

_____.

Your partner's answer:

_____.

2. If your friend asked you to help him/her cheat in an exam, what would you do?

Your answer:

_____.

Your partner's answer:

_____.

3. If your mother did not like your friend because he/she wasn't polite to her, what would you do?

Your answer:

_____.

Your partner's answer:

_____.

4. If someone told you your friend had said bad things about you, what would you do?

Your answer:

_____.

Your partner's answer:

_____.

5. If your friend was upset because he/she had left his/her maths homework at home, what would you do?

Your answer:

_____.

Your partner's answer:

_____.

Appendix 4.9

Lesson 9 – Who was I?

Duration: 60 mins

Target Students: Form 1

Procedures

	Teacher's actions	**Language used**	**Time Required**
1	T describes the appearance of some persons by using the pictures (Worksheet 1). T introduces the sentence pattern to the Ss.	e.g. tall, short, long/short hair, curly/straight/frizzy hair, round/long face, small/big mouth, small/big eyes, slim, plump etc. • "He/She is…" • "His/Her…is/are…" • "He/She has…"	10 mins
2	T asks the Ss to guess the name of a person by listening to her descriptions (Worksheet 2). T tells the Ss that they are allowed to ask maximum 5 "Yes/No"-typed questions.	e.g. "Are you a girl/boy?" "Do you like…?" "Are you good at…?"	10 mins
3	T delivers papers to the Ss and each of them write his/her own English & Chinese names on the paper. They also have to write 5-8 sentences about themselves. *(T is advised to put Worksheet 2 on the board as a reference.)* T asks the Ss to fold the paper in halves and hand it in a bag.		10 mins
4	T tells the Ss they are going to play a guessing game (Worksheet 2).		25 mins
5	T asks the Ss to write a short description about their best friend and give it to him/her after the lesson. T reminds the Ss that the change of the pronoun.	• "You have…" • "You are…" • "You like…"	5 mins

Worksheet 1

- I am quite tall.
- I have big eyes, small mouth and short hair.
- I am a singer.
- I dance very well.
- I like chilli food, especially Taiwanese Hot Pot.
- I have just finished my concert in Hong Kong.
- Who was I?

(Aaron Kwok)

Worksheet 2 (Instructions of the game)

1. T asks individual student to come out and draw a paper from the bag.
2. The student pretends that he/she was the classmate on the paper and tells the whole class the description on the paper. At the end of the description, the students should say, **"Who was I?"**
3. Other students are allowed to ask maximum 5 "Yes/No"-typed questions in order to guess the person.
4. When there is one student gets the correct person, that student is the next person who come out and draw a paper from the bag. **OR**
5. If all the students cannot find out the person, the person on the paper would be the next who draw a paper.

Appendix 4.10

Lesson 10 – Lost in a Desert

Duration: 60 mins

Target Students: Form 1

Procedures

	Teacher's actions	Language used	Time Required
1	T asks the Ss if they have gone camping before and asks them to imagine what they can do if they are lost.		3 mins
2	T asks the Ss to work in groups of four. (T is recommended to let the Ss be grouped by themselves so that they can work smoothly.)		2 mins
3	T delivers instruction sheets (Worksheet 1) to the Ss. T asks the Ss to read through the instruction and underline the words that they do not understand so that they can ask after finished reading. T gives instruction to the Ss and tells the meanings of the vocabulary items.		10 mins
4	T asks the Ss the start the discussion and reminds them to write down the ideas (Worksheet 2) so that they can report to the whole class about the plan.		25 mins
5	T asks the groups to come individually and tell the whole the plan.		15 mins
6	T asks the whole class to choose the best plan.		5 mins

Worksheet 1

Imagine you are on a school trip in the middle of the Nani Desert. It is a fascinating place. There are some animals, such as hares and jackals. There are also some birds that look like chickens. Your teachers and guides have shown you how the Bushmen trap animals for food. They have also taught you how to find your way by the stars. It gets very cold at night and in the morning the tents are wet with dew. During the day, it is very hot and it is important to stay in the shade.

You and your friends are left behind by mistake. You have a large tent, some matches, four bottles of water, some plastic bags, some old newspapers, some biscuits, some string, a sharp knife, a torch and some batteries. How are you going to survive until you are rescued? Have a discussion with you friends. In the discussion, decide what to do and how to use the things you have. You can also use things you might find in the desert, such as dried grasses and twigs. You might like to consider:

- how you will find food
- how you will collect water
- how you will protect yourselves from the sun
- how rescuers can find you
- whether you should stay in one place or try to find your way out of the desert and why.

Try to decide on a plan of action.

Worksheet 2

How you will find food	
How you will collect water	
How you will protect yourselves from the sun	
How rescuers can find you	
Whether you should stay in one place or try to find your way out of the desert and why	

Other things you want to mention	

Appendix 4.11

Lesson 11 – Is Betty the Murderer?

Duration: 60 mins

Target Students: Form 1

Procedures

	Teacher's actions	Language used	Time Required
1	T tells the Ss that they are going to find out the murderer. T asks the Ss to work in pairs (Student A & Student B). T then delivers the instruction (Worksheet 1) and newspaper cuttings (Worksheets 2a & 2b) to the pairs.		5 mins
2	T goes through the instruction with the Ss and asks them to start.		15 mins
3	T asks the Ss if they think Betty is the murderer and asks some of the pairs to give reasons.		5 mins
4	T delivers another worksheet (Worksheet 3) to each pair and gives instruction. T asks the Ss to imagine how the murder happened by reading the picture on Worksheet 3 carefully and complete the sentences (Worksheet 4).		5 mins
5	T asks the pairs to start doing the activity.		20 mins
6	T asks some of the pairs to read out their sentences.		10 mins

Worksheet 1

Work in pairs. Each of you has a newspaper cutting. You are required to compare these two newspaper articles about the Mary Chan case.

Compare the two newspaper reports, making comments about the following:

- the date of publication
- the people shown in the photographs
- things worn by the people in the photographs
- expressions of the people in the photographs
- the details given in the articles

Worksheet 2a

Student A

THE MORNING SUN

Wednesday 26 May 1999

NEWLY-ENGAGED WOMAN MURDERED

This is the last photograph taken of Mary Chan before she was killed on Monday evening. Mary and her fiancee, Bill Wong, are seen here at the *New Moon Restaurant* in Repulse Bay, where the couple had dinner on Monday night. Bill proposed to Mary during the meal and Mary can be seen wearing her new sapphire engagement ring. With the young couple is their waitress on Monday evening, Betty Ma. Betty is the only child of Mr and Mrs Albert Ma of Clear Water Bay. She says she dyed her hair because she wanted to be different. Betty describes her childhood as 'very quiet'.

You can use the phrases below to help you during the discussion.

The name of the newspaper is _____.
The first/second article was published on (date) _____.
The photograph with the first/second article is of _____.
The first/second photograph has been taken at (place) _____.
In the first/second photograph, (person's name) is wearing _____.
In the first/second photograph, (person's name) appears to be (expression) _____.
Look at (person's name)'s hand.
Look at (person's name)'s head.
In the first/second article, we are told that _____.
Where did (person's name) really get the money from?
Because the information given in the articles is different, I think that _____.

Worksheet 2b

Student B

THE MORNING SUN

Thursday 10 June 1999

WAITRESS GOES TO AMERICA Betty Ma will soon wave goodbye to Hong Kong and set off for a new life in the United States of America. Betty's most treasured possession is the airline ticket she bought with money sent to her by her brother in America. Betty is delighted to leave her job at the *New Moon Restaurant.*

'I used to envy all the rich customers,' said Betty, 'but now my dream has come true and I can start a new life in America.'

You can use the phrases below to help you during the discussion.

The name of the newspaper is _____.
The first/second article was published on (date) _____.
The photograph with the first/second article is of _____.
The first/second photograph has been taken at (place) _____.
In the first/second photograph, (person's name) is wearing _____.
In the first/second photograph, (person's name) appears to be (expression) _____.
Look at (person's name)'s hand.
Look at (person's name)'s head.
In the first/second article, we are told that _____.
Where did (person's name) really get the money from?
Because the information given in the articles is different, I think that _____.

Worksheet 3

Read the picture below and imagine how the murder happened. Complete the sentences with your own words. The objects inside the picture may help you.

Worksheet 4

1. Betty Ma was jealous of .....

2. Betty felt her own life was .....

3. Betty heard Mary say .....

4. When Betty left, she saw .....

5. Betty went after Mary .....

6. Betty hit Mary with .....

7. Mary fell .....

8. Betty took .....

9. Betty went to Mary's flat and .....

10. Betty lost her hat when .....

11. Betty put the money .....

Appendix 4.12

Lesson 12 – Can you read timetables?

Duration: 60 mins

Target Students: Form 1

Procedures

	Teacher's actions	**Language used**	**Time Required**
1	T revises expressions for date and time with class	Expressions for date and time	5 mins
2	T distributes 2 sets of timetable to each student in a pair and ask them to check with each other the missing information on their own timetable.	Questions about date and time Expressions for date and time	15 mins
3	T distributes halves of sentences to each student in a pair and ask them match the broken sentences.		15 mins
3	T delivers papers to the Ss. T asks each pair of students to make up a story with the broken sentences and also add their own. At the end each pair read out their story to another pair of students.	Story telling	25 mins

Appendix 5 Test Instrument for Study III

IMAGES REDACTED DUE TO THIRD PARTY RIGHTS OR OTHER LEGAL ISSUES

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IMAGES REDACTED DUE TO THIRD PARTY RIGHTS OR OTHER LEGAL ISSUES

III. Initial sounds in words: Circle the picture with the same initial sound

Time: 10 mins per page

Skills: identifying initial sounds

Materials: Worksheets (with a series of picture strips, each containing a stimulus picture at the left and four other pictures)

Procedure:

- Introduce and identify picture names with students.
- T may name the pictures with students and
- Ask students to circle the picture only if its name begins with the same sound as the picture on the left.
- Ask students to name the correct picture afterwards.

IV. Final sounds in words: Same or Different?

Time: 10 mins

Skills: Identifying final sounds between two words.

Materials: None

Procedure:

- Say two words with same or different final sound
- Ask students to distinguish if the two words end in the same or the different final sound
- Ask students to give response by saying "same" or "different"
- The following are some of the examples. Teachers can start with C-V-C words and finally longer words.

Some examples:

1. *net and but (same)*
2. *fan and fat (different)*
3. *fog and pig (same)*
4. *hen and man (same)*
5. *six and tax (same)*
6. *bus and gas (same)*
7. *hat and hid (different)*
8. *leg and let (different)*
9. *rub and rug (different)*
10. *lip and tap (same)*
11. *hop and hot (different)*
12. *log and bug (same)*

V. Rhymes: identify rhyming pairs

Time: 10 mins

Skill: Listening; identifying rhyming words

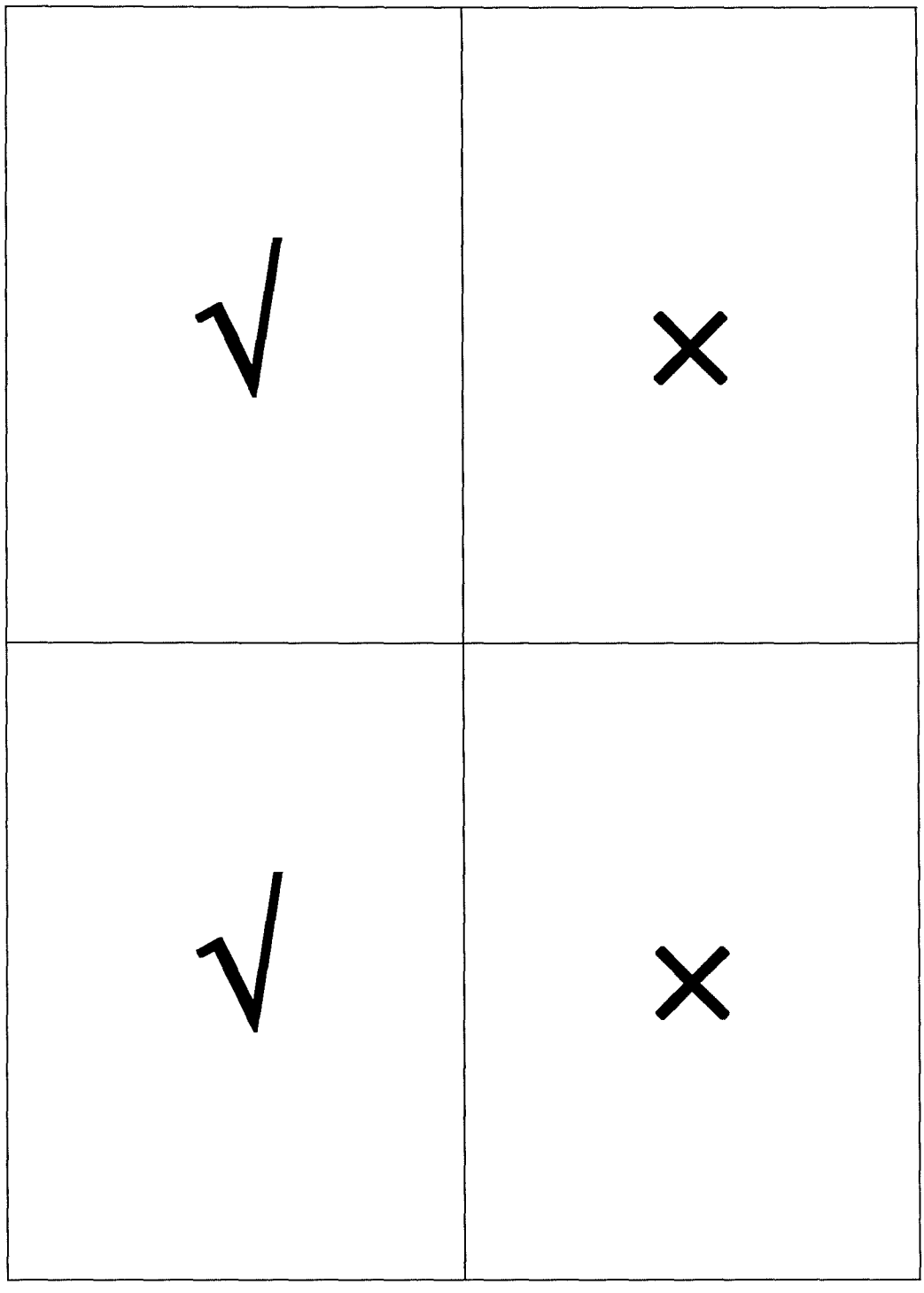
Materials: Sets of Yes and No cards for students

Procedure:

- Divide students into groups
- Distribute the Yes / No cards to each group
- Read statements similar to the examples below
- Ask students to hold up 'Yes' card if the two words in the statement rhyme. Otherwise, students should hold up the 'No' card.
- The fastest group which holds up the correct card wins

Some examples:

1. I say *fox* and *box*. (yes)
2. I say *coat* and *road*. (no)
3. I say *found* and *ground*. (yes)
4. I say *man* and *men*. (no)
5. I say *car* and *cart*. (no)
6. I say *feet* and *meet*. (yes)
7. I say *book* and *look*. (yes)
8. I say *glass* and *dress*. (no)
9. I say *bug* and *rug*. (yes)
10. I say *chair* and *church*. (no)



VI. Rhymes: Number Rhymes

Time: 15 mins

Skill: listening; identifying rhyming words; relating rhyming words with numbers.

Materials: number cards

Procedure:

- pre-teach nos. 1-10 orally with number cards, practise.
- explain a rhyming pair, e.g. pan and man
- Tell students that two words that rhyme with a number word are going to be presented.
- Read out the sentences. Ask students to supply the rhyming number word to finish each sentence.
- Ask students to practise saying the whole sentence after each rhyme. E.g. "*Gate* and *late* rhyme with *eight*."

Some examples:

1. *Blue* and *shoe* rhyme with_____. (two)
2. *Gate* and *hate* rhyme with _____. (eight)
3. *Fix* and *mix* rhyme with _____. (six)
4. *Drive* and *hive* rhyme with _____. (five)
5. *Gun* and *run* rhyme with _____.(one)
6. *Tree* and *see* rhyme with_____.(three)
7. *When* and *then* rhyme with _____.(ten)
8. *Pine* and *line* rhyme with _____.(nine)
9. *Door* and *more* rhyme with _____.(four)
10. *Eleven* and *heaven* rhyme with _____.(seven)

VII. Rhymes: Thinking of Rhyming Words

Time: 10 mins
Skill: listening;
Materials: None
Procedure:

- Illustrate what rhyme is. Practise with students some pairs of rhyming words. E.g. *cat* rhymes with *that; air* rhymes with *hair,* etc
- Put Ss in groups. Give one set of pictures to Ss. Ask them to cut out the pictures.
- Go through the pictures with them.
- Tell students that you are going to read some sentences and ask students to listen carefully.
- Read the sentence aloud and stress the last word in each sentence
- Ask students to pick out the picture that rhymes with the last word in each sentence. (e.g When teacher say the sentence "Be sure to wear a hat on your *head*", students are expected to say '*red*', '*bed*', '*Ted*', '*said*' and so on)

Some examples:

1. Be sure to wear a hat on your *head.*
2. We will take a trip to the *lake.*
3. John, you may pet the *cat.*
4. They all said hello to the *man.*
5. Have you ever seen a *mouse*?
6. Let's all count to *ten.*
7. It's cold. Put on your *coat.*
8. My favourite flower is *rose.*

Appendix 6.3

3. Initial Consonants

	Date:	Min:	Remarks
I. Initial Consonants: Chalkboard drill			
II. Initial Consonants: Match a pair			
III. Initial Consonants: Print and Sound Worksheet A : Initial Consonants Worksheet B: Initial Consonants Worksheet C: Initial Consonants			
IV. Initial Consonants: Mental Substitution Worksheet A: Mental Substitution			
V. Initial Consonants : Blank Filling Dictation Worksheet for Dictation			
VI. Initial Consonant: Snake Talks			
VII. Initial Consonant: Ten Fat Fireman Worksheet 1: What are the firemen doing? Worksheet 2: Help the firemen to say words with "f".			
VIII. Initial Consonant: Sing a song (Lily has a little lamb)			
IX. Initial Consonant: Sing a song (what's your name?)			

Teacher: _____

Class: _____

Initial Consonants

I. Initial Consonants: Chalkboard drill

Objectives: To identify initial letter in words

Time: 15 mins

Materials: blackboard for illustration

Procedure:

- Write a letter on the board. Tell students that they are going to learn the sound of that letter.
- Write on the board a column of the sight words that students have learnt, all of them begin with the letter written on the board.

For example,

m
my
most
man
much
milk

- Ask students to listen carefully the sound at the beginning of each word. The sound could be stressed. The initial sound 'm' is introduced.
- Ask students to read the words.
- Ask students to supply any words with the same initial sound, if they could think of any.

Some other examples:

b	**c**	**d**	**f**	**h**	**n**	**p**	**t**
big	cat	dog	far	hen	not	pin	tap
bag	can	did	fog	hot	net	pot	top
bad	come	dig	fan	hog	nut	pop	tug

II. Initial Consonants: Match a pair

Objectives: To identify initial letter in words

Time: 25 mins

Materials: different pairs of picture cards

Procedure:

- Cut out the picture cards.
- Pre-teach students the objects of the picture cards.
- Emphasize the initial sound of the objects while reading, e.g. ***h****orse, **h**and; **p**an, **p**in; **f**an, **f**ish, etc.*
- Divide students into groups or pairs
- Give one set of picture cards to each group or each pair of students
- Shuffle and place all the picture cards face down on the table
- Students take turns to turn up two cards, hoping to match a pair of initial letter sounds; if a student is successful, he or she can pick up both cards; otherwise, other players continue taking turns
- The winner is the player with the most pictures at the end of the game

III. Initial Consonants: Print and Sound

Objectives: To identify initial letter in words

Time: 25 mins

Materials: worksheets for students

Procedure:

- Instruct students to do the worksheets following the sequence of sections

Worksheet A : Initial Consonants

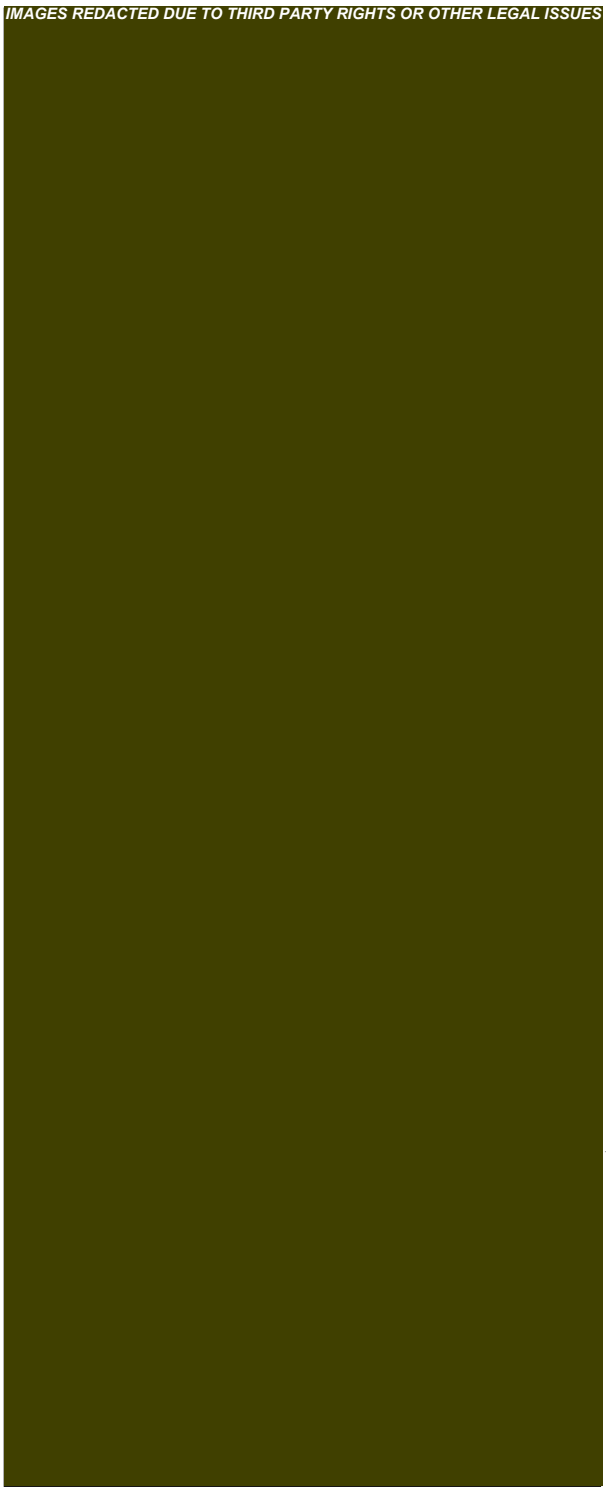
i. Read out the letter sounds.
ii. Ask Ss to add the letter to the column of words.
iii. Read the words with Ss, highlight the initial consonant.

t	s	c	l
___ag	___ad	___ap	___og
___ub	___ix	___ot	___ap
___en	___un	___up	___ed
___op	___it	___an	___eg
___ip	___ob	___ub	___et

Worksheet B: Initial Consonants

i. Read out the words with students. Exaggerate the initial consonant in each word.

ii. In each blank space, ask Ss to put in the correct letter.



___at

___at

___wo

___ap

___ap

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___an

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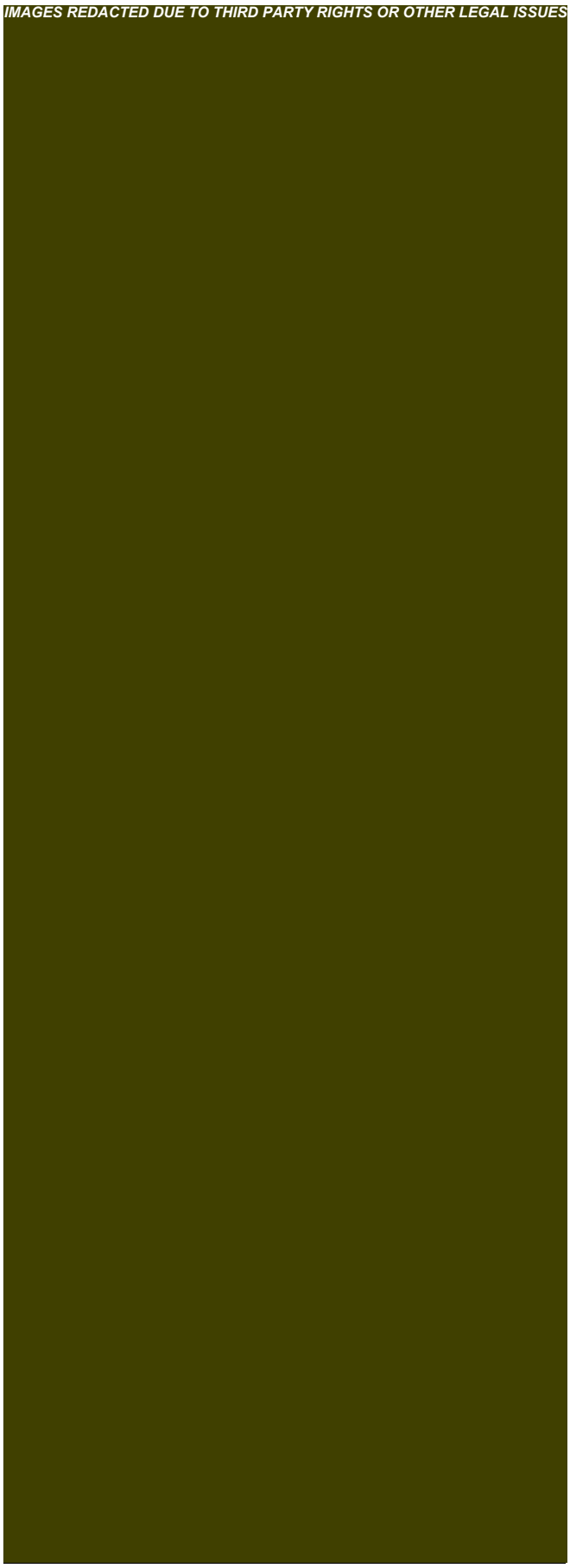
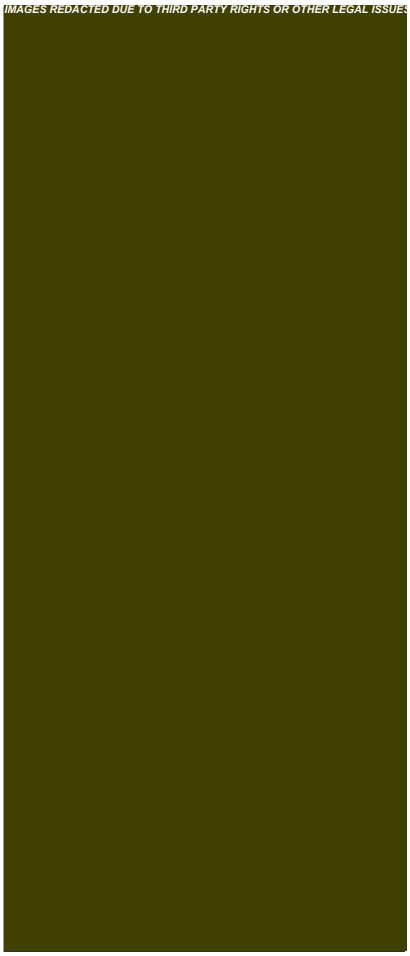
___eg



___ot

___ix

___en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Worksheet C: Initial Consonants

i. Blank Dictation

ii. Read out the words and ask Ss to add the initial letter to the word.

1. ____**im**
2. ____**ot**
3. ____**ip**
4. ____**ub**
5. ____**et**
6. ____**un**
7. ____**ad**
8. ____**id**
9. ____**um**
10. ____**at**
11. ____**ig**
12. ____**ug**
13. ____**eb**
14. ____**en**
15. ____**ap**
16. ____**em**
17. ____**ox**
18. ____**og**
19. ____**un**
20. ____**an**
21. ____**eg**
22. ____**it**
23. ____**op**
24. ____**us**

IV. Initial Consonants: Mental Substitution

Objectives: To think the sound of initial letter in words; to construct new words by thinking the sound of the words

Time: 15 mins

Materials: blackboard for illustration; worksheets for students

Procedure:

- Write a known word on the board. Have students to observe closely as you erase the initial letter and substitute a different known consonant.

bat ____at cat

- Follow the same procedure. Substitute other consonants to make words, e.g. fat, hat, rat, etc
- Instruct students to do the worksheets for similar exercise

Examples of Word families:

cat	*sad*	*can*	*car*	*cap*	*hen*
bat	*had*	*fan*	*jar*	*map*	*men*
hat	*bad*	*ran*	*tar*	*nap*	*pen*
rat	*dad*	*pan*	*far*	*tap*	*ten*

Worksheet A: Mental Substitution

In each of the following words, write another letter to make the meaning of the original word different.

For example:
bat cat

1. hat ___at
2. sad ___ad
3. can ___an
4. car ___ar
5. cap ___ap
6. hen ___en
7. bad ___ad
8. ran ___an
9. ten ___en
10. fun ___un
11. pot ___ot
12. log ___og

V. Initial Consonants : Blank Filling Dictation

Objectives: To dictate words with context provided

Time: 15 mins

Materials: worksheet for dicitation

Procedure:

- Pre-teach the picture cards orally.
- Distribute the dictation work sheet.
- Read the sentence with Ss.
- Ask them to stick pictures next to the sentence.
- Read the sentences to Ss again. Stress the missing word.
- Ask Ss to fill in the missing word.
- For very young Ss, ask them to fill in the initial consonant only.

Worksheet for Dictation

1. The student is carrying a _____ schoolbag.

2. Can I have a _____of coffee please?

3. The _____is barking very loudly.

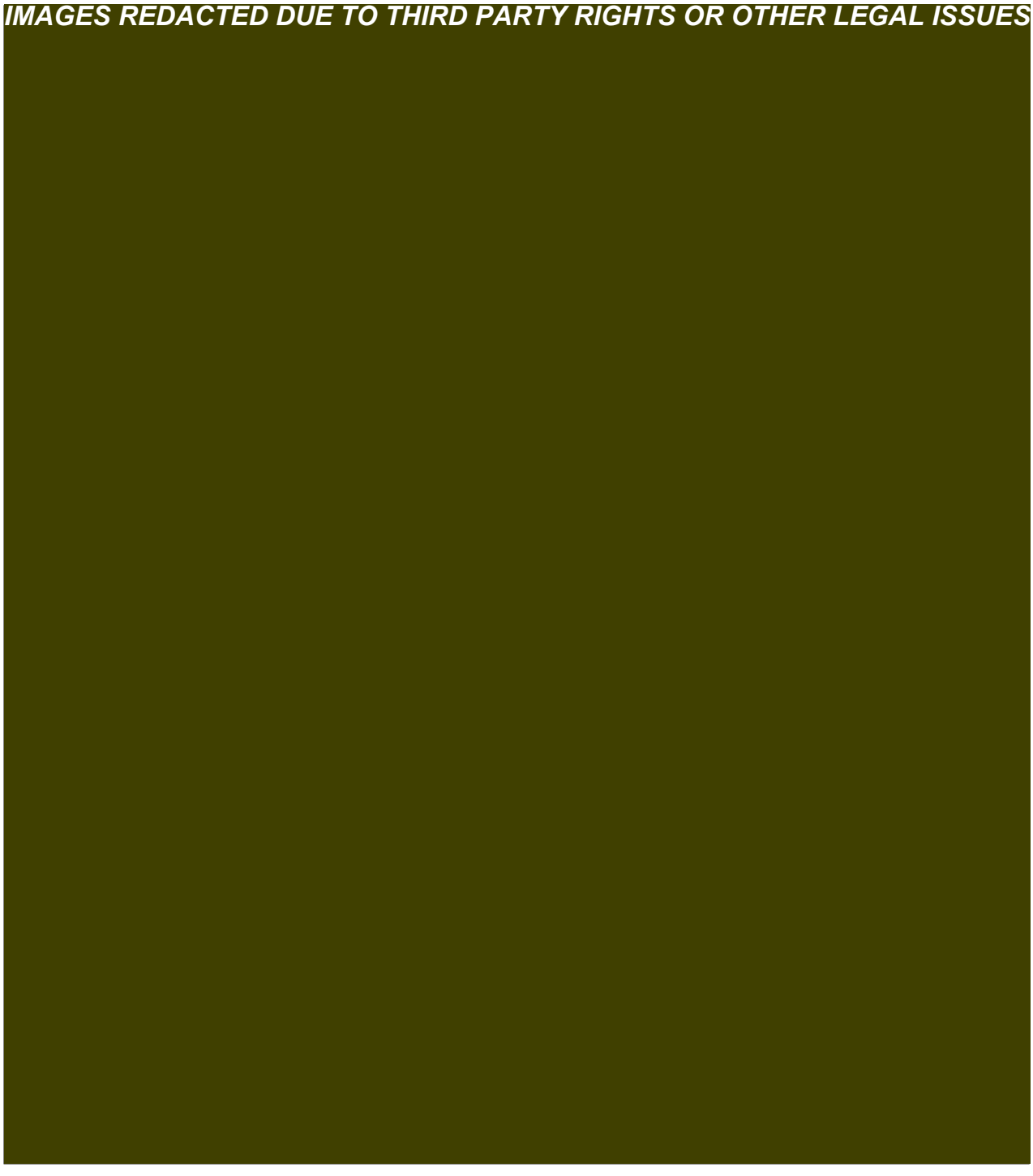
4. Today is very _____. Let's go swimming.

5. Turn on the _____.

6. Can I have a jar of _____ for the bread?

7. I go to _____ at ten o'clock every night.

8. Everyone of us has two hands and two _____.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VI. Initial Consonant: Snake Talks

Objectives: To practise "s" sound

Integration with Language Items: *Sit down. Stand up.*

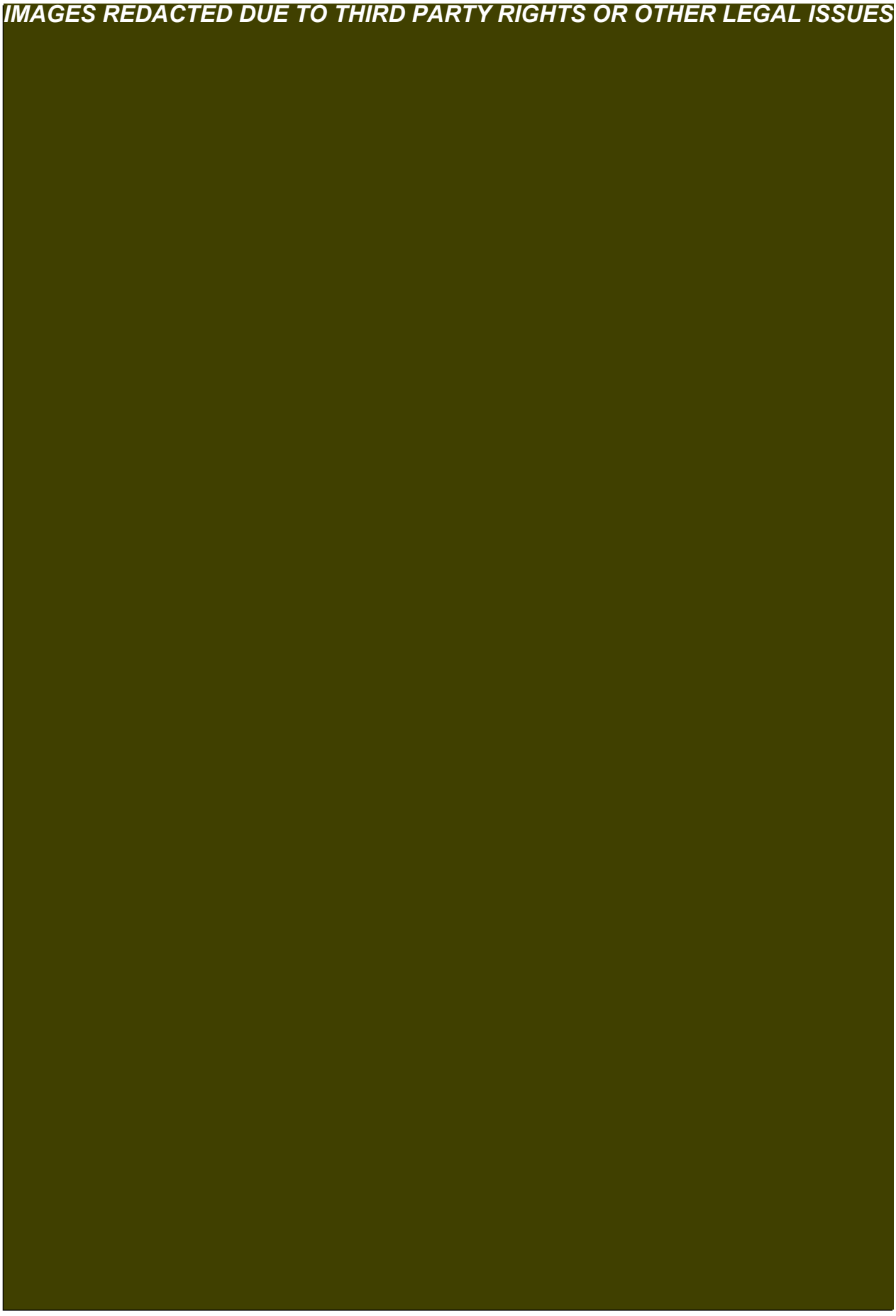
Time: 25 mins

Materials: Word Cards

Small cutouts

Procedures:

1. T plays the game "Simon Says" with pupils, asking them to stand up and sit down.
2. Practise the sound "s" as in "sit" and "stand".
3. T imitates the movement of a snake by moving his/her hands. He/she associates the "s" with the sound snakes make.
4. Ss move their hands in the shape of "s" (like a snake) and produce the sound "s".
5. Distribute the cutouts. Give one to each Ss.
6. Ask Ss to go round the classroom and find out other Ss' name (or find words) that has the "s" and write down the name on the cutout.
7. Put Ss into groups of 5 or 6 and ask each group to stick their cutouts together to form a snake.
8. Ask each group to read out their snake.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VII. Initial Consonant: Ten Fat Fireman

Objectives: To practise "f" sound

Integration with Language Items: *fat, fireman, four; counting the numbers*

Time: 15 mins

Materials: A song sheet

Paper cutout of a fat fireman

Worksheets 1& 2

Procedures:

1. T teachers the numbers one to ten, using the song "Ten Little Indians" and stick the lyric on the blackboard.
2. Ss count the numbers while singing the song.
3. T makes up a story , e.g. "The ten little Indians want to be firemen. They eat a lot and become very fat."
4. Introduce the vocabulary "fat" and "firemen".
5. T sticks the song sheet of the "Ten Fat Firemen" and sings the song with Ss.
6. T imitates the action of fighting fire and producing the "f" sound.
7. Distribute Worksheet 1. Ask Ss to find out what the firmen are doing.
8. Distribute Worksheet 2. Ask Ss to write down words with "f" on the worksheet.

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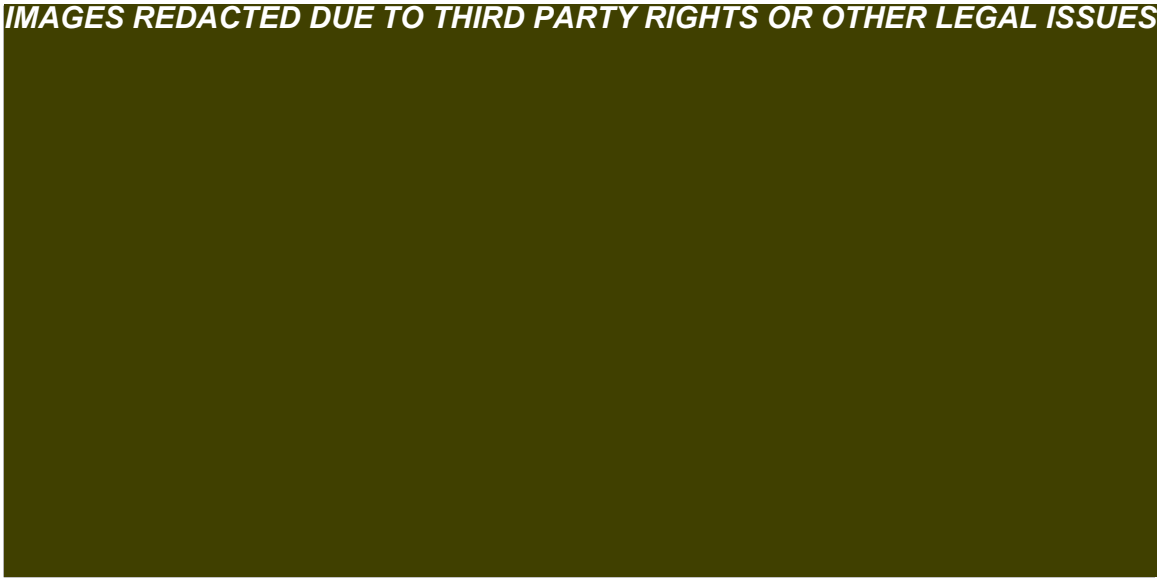
Ten Little Indians

One little, two little, three little Indians.
Four little, five little, six little Indians.
Seven little, eight little,
nine little Indians.
Ten little Indian boys/girls.

Ten Fat Firemen

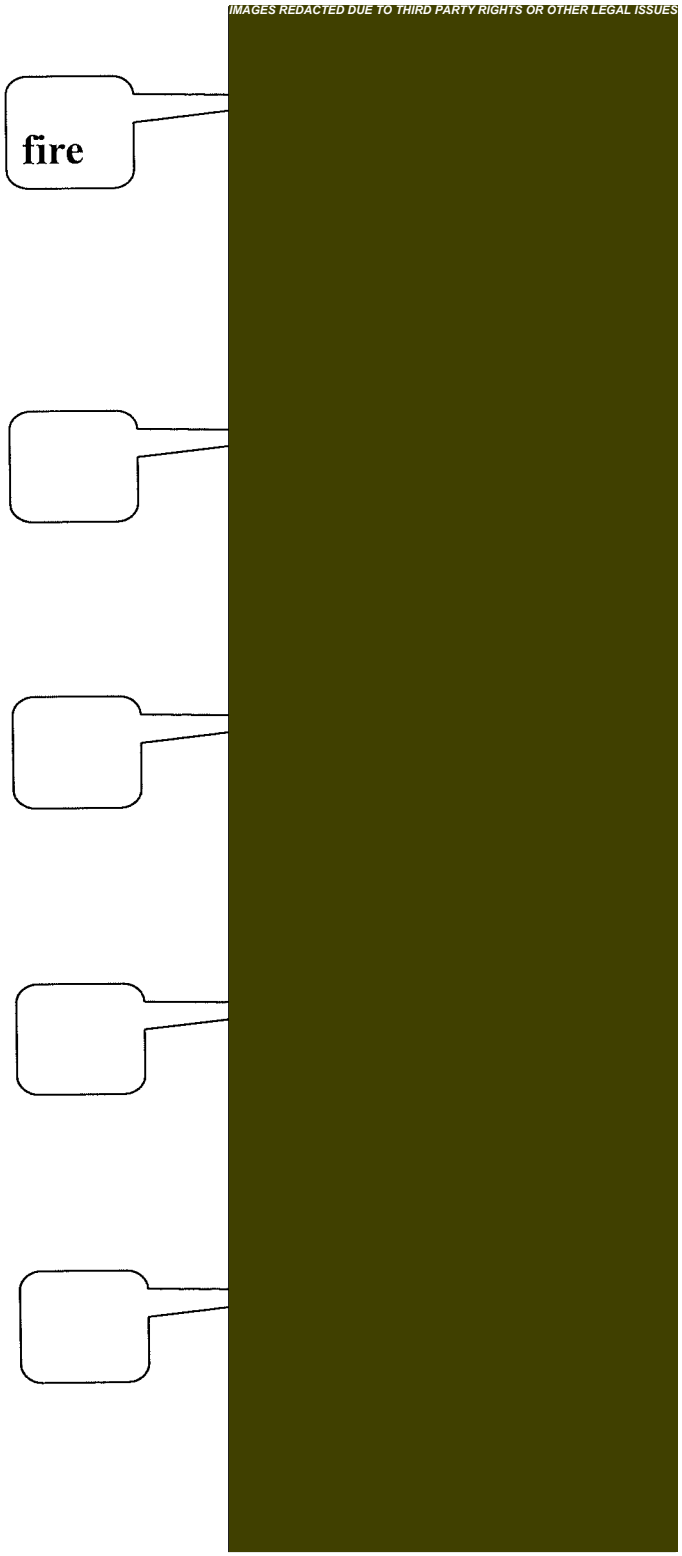
One fat, two fat, three fat firemen.
Four fat, five fat, six fat firemen.
Seven fat, eight fat,
nine fat firemen.
Ten fat firemen.

Worksheet 1: What are the firemen doing?



The f_____ f_____ f_____ are eating f_____ f_____.

Worksheet 2: Help the firemen to say words with "f".



VIII. Initial Consonant: Sing a song

Objectives: To practise "l" sound

Integration with Language Items: *Mary has a little lamb*

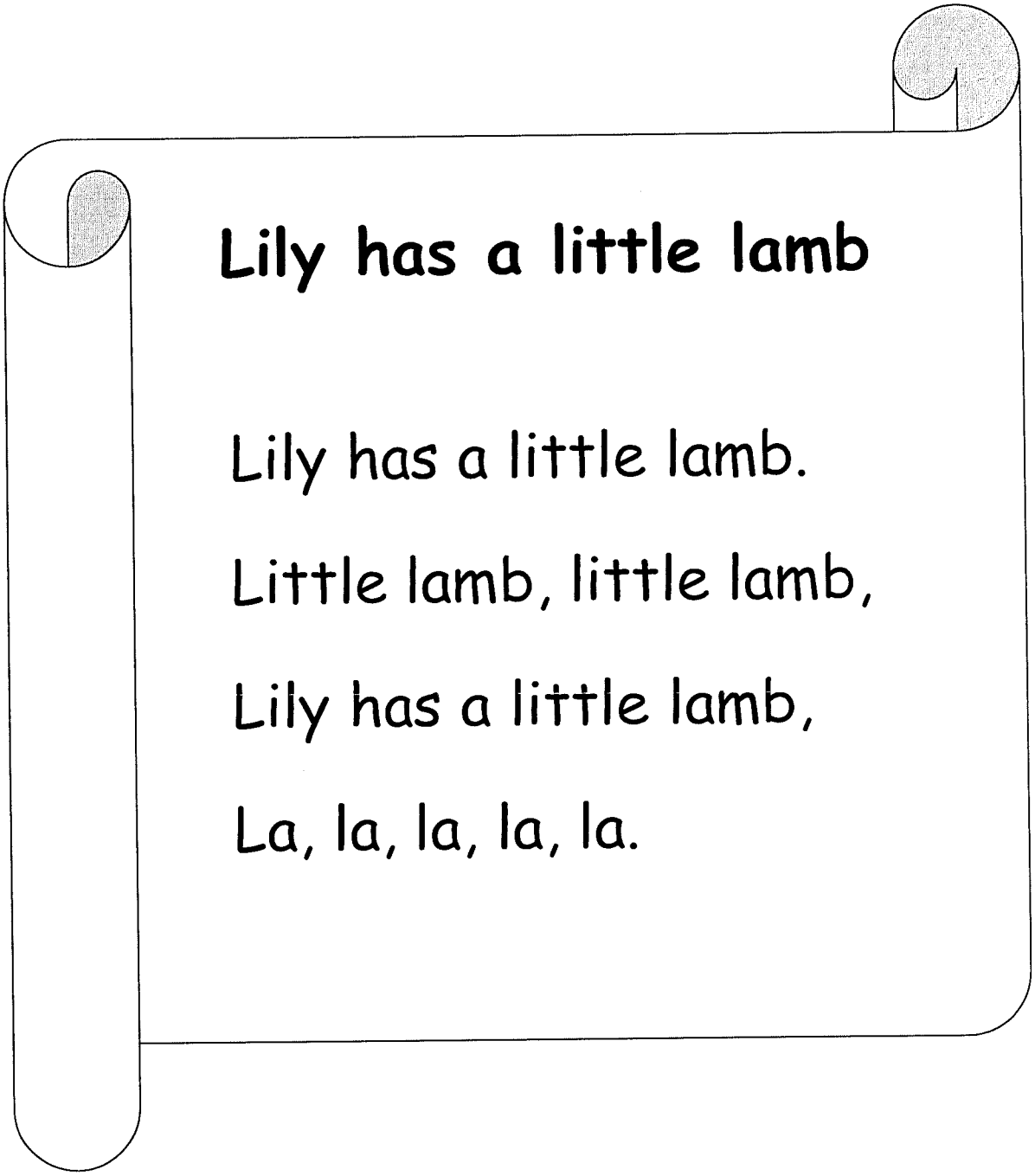
Time: 10 mins

Materials: A song sheet

Procedures:

1. T introduces the "l" sound with words "little", "lamb".
2. Ss sing the song together.
3. T may change names to "Lucy", "Larry", "Leon", etc.

Song Sheet: Lily has a little lamb



Lily has a little lamb

Lily has a little lamb.

Little lamb, little lamb,

Lily has a little lamb,

La, la, la, la, la.

X. Initial Consonant: Sing a song

Objectives: To practise "m", "n" sounds

Integration with Language Items: *What's your name? My name's Mary. I'm a boy.*

Time: 10 mins

Materials: A song sheet

Procedures:

1. T introduces the "m" & "n" sounds with words like "my", "Mary", "Martin", "name".
2. Teacher sings a song with Ss to practise the initial consonants.

Song Sheet: (based on the Cantonese melody: Open the mosquito net)

My name's Mary (Martin).

My name's Mary (Martin).

I'm a girl (boy).

I'm a girl (boy).

Hello, I'm Mary (Martin).

Hello, I'm Mary (Martin).

What's your name?

What's your name?

Appendix 6.4

4. Consonant Blends

Date: Min:

		Remarks		
I.	**Listen to the "r"** Worksheet: Find the "r"			
II.	**Listen to the "l"** Worksheet: Find the "l"			
III.	**Match the blends** Worksheet : Match the initial consonant blends			
IV.	**Listen to the "s" +** Worksheet: find the "s"			
V.	**Match the blends** Worksheet: Match the initial consonant blends			
VI.	**Change a blend** Worksheet: change the blends			

Teacher: _____

Class: _____

4. Consonant Blends

I. Listen to the "r"

Objective: identify the "r" sound in words

Time: 15- 20 minutes

1. Read the following list to students, ask them to listen to the common sound in the words ("r").

   bread
   cry
   drum
   frog
   grass
   price
   train

2. Show the pictures cards and repeat the list. Ask Ss to say the words after you.

3. Distribute worksheet. Repeat the consonant blends and ask Ss to colour the 2 consonant blend in each word.

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II. Listen to the "l"

Objective: identify the "l" sound in words

Time: 15 – 20 minutes

1. Read the following list to students, ask them to listen to the common sound in the words ("l").

   blow
   cloud
   fly
   glove
   plate
   slow

2. Show the pictures cards and repeat the list. Ask Ss to say the words after you.

3. Distribute worksheet. Repeat the consonant blends and ask Ss to colour the 2 consonant blend in each word.

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III. Match the blends

Objective: distinguish the "r" & "l" consonant blends

Time: 10 minutes

1. Distribute the worksheet. Read the following list one by one. Ask Ss to circle the word on the worksheet that begins with the same consonant blend they heard.

1. tree 2. blue 3. brown 4. dress 5. clear

---

2. Read the stimulus word and the target word in pairs. Ask Ss to follow you.

Worksheet : Match the initial consonant blends

1.	stand	train	play
2.	clock	floor	black
3.	black	bread	glad
4.	drink	press	class
5.	flower	creek	clear

IV. Listen to the "s" +

Objective: identify the "s"+ consonant blends

Time: 15-20 minutes

1. Read the following list to students, ask them to listen to the common sound in the words ("s" blend).

   school
   sky
   smile
   snow
   spoon
   stop
   swim
   sleep

2. Show the pictures cards and repeat the list. Ask Ss to say the words after you.

3. Distribute worksheet. Repeat the consonant blends and ask Ss to colour the 2 consonant blend in each word.

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V. Match the blends

Objective: distinguish the "s"+ blends

Time: 10 minutes

1. Distribute the worksheet. Read the following list one by one. Ask Ss to circle the word on the worksheet that begins with the same consonant blend they heard.

1. star 2. snake 3. smell 4. skirt 5. speed

---

2. Read the stimulus word and the target word in pairs. Ask Ss to follow you.

Worksheet: Match the initial consonant blends

1. snail	skin	stand	speak	smart
2. snail	skin	stand	speak	smart
3. snail	skin	stand	speak	smart
4. snail	skin	stand	speak	smart
5. snail	skin	stand	speak	smart

VI. Change a blend

Objective: make aware of the sound patterns in words

Time: 10-15 minutes

1. Show the picture cards in pairs and read out the names on it.
2. Distribute worksheet. Ask Ss to fill the blank space with the blend in bracket and read out the word.

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Consonant digraphs

5. Initial Consonant Digraphs

Date: Min:

Remarks

I.	**Initial Consonant Digraphs - Discriminating the print and sounds of digraphs (sh, wh, th, ch)**			
II.	**Initial consonant digraphs** Worksheet: fill in the blanks			
III.	**Initial consonant digraphs: match the pictures** Worksheet: fill in the initial sound			
IV.	**Fun Dictation** Worksheet: Fun Dictation with initial consonant digraphs			
V.	**Look for the "ch" sound** Worksheet: Match and Say			

Teacher: _____

Class: _____

5. Initial Consonant Digraphs

I. Initial Consonant Digraphs - Discriminating the print and sounds of digraphs
(sh, wh, th, ch)

Time: 10 mins (each sound)
Skill: listening; identifying initial sounds; pronouncing the correct initial sounds
Materials: none
Procedure:

- Present a few words on the chalkboard.
- Ask Ss to look at the words and note how they are alike.
- Underline the digraph.
- Practise the sound of the digraph
- Supply more examples.
- Repeat the steps by for each digraph

Consonant digraphs

Word lists:

sh	**ch**	**wh**	**th**
shell	chair	white	this
ship	chin	where	that
shoe	chicken	whale	there
shelf	chalk	who	thick
shirt	chimney	wheel	thank you
shop	children		thin
short	chocolate		thumb

II. Initial consonant digraphs: match the pictures (sh, wh, th, ch)

Time: 10 mins (each sound)

Skill: listening; identifying initial sounds; pronouncing the correct initial sounds

Materials: picture cards & work sheet

Procedure:

- Present the picture cards.
- Read the names of the picture with Ss.
- Distribute the work sheet
- Ask Ss to fill in the consonant digraph for each word
- Practise the words again

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IV. Initial consonant digraphs: match the pictures (sh, wh, th, ch)

Time: 10 mins

Skill: identify the initial digraphs in words

Materials: work sheet

Procedure:

- Remind Ss of the 4 initial digraphs by giving 4 example words
- Distribute the worksheet
- Ask Ss to fill in the initial diagraphs for each word.
- Read through the pictures with Ss.

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V. Fun Dictation

Time: 15 minutes

Materials: worksheet

Skills: listening, print-sound relations

Procedures:

- Revise the 4 digraphs with Ss
- Distribute worksheet.
- Explain the task: ask Ss to add the digraphs for each word
- Read the dialogue to them.
- Go through the answers.

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VI. Look for the "ch" sound

Time: 20 minutes

Materials: worksheet

Skills: listening, print-sound relations

Procedures:

1. T introduces the sound "ch" with the sentence: "The children are sitting on the chairs."
2. Present the picture cards and practise the "ch" sound in the words.
3. Ss practise the "ch" sound with gesture like the movement of a chicken.
4. Distribute the worksheet and ask Ss to fill in the blanks with "ch" and match the words with the pictures.
5. Read the words aloud.
6. Present the poem and read with Ss.
7. Ask Ss to imitate the movement of chicken when reading.

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Appendix 6.6

6. Rimes (Short Vowels)

	Date:	Min:	Remarks
an – A man ran after a van			
at – Old MacDonald has a bag			
in – Are you thin?			
it – Who hit Kitty?			
en – Who are the men?			
et – Do you have a pet?			
op – What is a mop?			
og – A frog on a log			
am – Sam likes eating ham			
ap – Who is taking a nap?			
ub – A club in the pub			
ug – Concentration			
and – Find the right letter			
ack – Where is my back?			

Teacher: _____

Class: _____

6. Onset – rimes (short vowels)

an

(i) Name of task: A man ran after a van

Aims: to identify the sound "an" in words.

Time: 10 mins

Procedures:

- Teacher gets students to know the sound "an" by reading a poem

*A **man** **ran** after a **van***
*He was holding a **fan***
*Oh! The **van** **ran** and **ran***
*The **man** could not see the **van**!*

- Teacher asks students to read the poem for several times.
- Teacher practices the "an" sound with students.

6. Onset – rimes (short vowels)

at

(ii) Name of Task: Old MacDonald has a bag

Aims: to enable students to recognize the sound "at" and produce words with the same sound.

Time: 15 mins

Materials: a song, blackboard

Procedures:

- Teacher demonstrates how to produce the sound "at" by reading these sentences: "I can see a cat.". " I can see a hat."
- Teacher writes the song " Old MacDonald has a bag" on the board.

Old MacDonald has a bag, E-I-E-I-O
And in the bag he has a ***cat****, E-I-E-I-O*
With a ***cat****,* ***cat****, here*
And a ***cat****,* ***cat****, there,*
Here a ***cat****, there a* ***cat****,*
Everywhere a ***cat****,* ***cat****,*
Old MacDonald has a bag, E-I-E-I-O.

- Students sing the song several times.
- Each time when students sing the song, teacher prompts them to come up with a new word that rhymes with the sound "at". For example, "rat", "bat", "mat", "hat", etc.
- Teacher asks students to sing the song again with the new word used.

6. Onset – rimes (short vowels)

in

(iii) Name of task: Are you thin?

Aims: to recognize words in "in" sound with pictures

Time: 10 mins

Materials: pictures for demonstration

Procedures:

- Teacher asks students a question "Are you thin?".
- Teacher tells students that she is going to show a thin boy to the class.
- Teacher holds one of the pictures with a thin boy on it to the class and tells students that the boy is thin.
- Teacher tells students that there are some other words which have the sound "in".
- Teacher shows the remaining pictures to the students and introduces the sound "in". Teacher unfolds the picture cards first, with the picture as well as the word shown to the class.
- Teacher tests students' memories by folding the picture cards, with only the picture shown to students.
- Teacher practices reading the words with students.

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IMAGES REDACTED DUE TO THIRD PARTY RIGHTS OR OTHER LEGAL ISSUES

6. Onset – rimes (short vowels)

it

(iv) Name of task: Who hit Kitty?

Aims: to recognize the sound "it" in stories.

Time: 10 mins

Materials: a humorous story with words in "it" sound; a copy of the story for students.

Procedure:

- Teacher tells student that she has a friend called "Kitty" and she wants to tell students a story about her.
- Teacher reads out the story and asks students to listen to it carefully. Students are distributed a copy of the story.

I have a friend called Kitty. She is a teacher. Yesterday, she went home after school. She felt a ***bit*** *tired and she went to* ***sit*** *on the sofa. Unluckily, her fat cat, Susie, was very naughty and Kitty was* ***hit*** *Susie. Kitty got a bandage in the first aid* ***kit****. Kitty was very angry. She didn't give any food to Susie. Kitty told Susie, "You have to keep* ***fit****."*

- Teacher asks students to read the whole story.
- Teacher asks students to underline the words which have "it" sound on the worksheet.
- Teacher checks the answers with students and practices reading the words with students.

it - Worksheet

I have a friend called Kitty. She is a teacher. Yesterday, she went home after school. She felt a bit tired and she went to sit on the sofa. Unluckily, her fat cat, Susie, was very naughty and Kitty was hit by Susie. Kitty got a bandage in the first aid kit. Kitty was very angry. She didn't give any food to Susie. Kitty told Susie, "You have to keep fit."

6. Onset – rimes (short vowels)

en

(v) Name of task: Who are the men?

Aims: to get familiar to the sound "en" in words by listening to a poem.

Time: 10 mins

Materials: a poem

Procedures:

- Teacher tells students that they are going to learn the sound "en' Teacher reads aloud a short poem in class and asks students to listen very carefully.

  There are two men. One is Ben and one is Ken.
  Ben is holding a pen and Ken is holding a hen.
  They are ten.

- Teacher asks the following questions to check students' knowledge.
  e.g. How many men are there in the poem?
  Who are the men?
  How old are they?
  What are their name?
  What is Ben holding?
  What is Ken holding?

- Teacher writes the poem on the board and asks students to practise reading it.

6. Onset – rimes (short vowels)

et

(vi) Name of task: Do you have a pet?

Aims: to recognize different words with "et" sound

Time: 10 mins

Materials: flash cards for teacher; worksheet for students

Procedures:

- Teacher asks students a question. "Do you have a pet?". If students don't know what "pet" is, teacher can tell students by giving examples such as cat, dog and mice.
- Teacher tells students that the words in "et" sound are going to be introduced.
- Teacher shows the left-hand side *(e.g. p)* of the flash card to students and asks students to try to pronounce the sound.
- Then, teacher shows the other side *(e.g et)* to students and asks them to read the whole word.
- Teacher finishes all the flash cards.
- Teacher asks students to finish the short writing task.

et - Teacher's materials

p	**et**
g	**et**
m	**et**
b	**et**
s	**et**
v	**et**
w	**et**

et - Worksheet

B ------- et → Bet

____ ------- et → _____

____ ------- et → _____

____ ------- et → _____

____ ------- et → _____

____ ------- et → _____

____ ------- et → _____

6. Onset – rimes (short vowels)

op

(vii) Name of task: What is a mop?

Aims: to learn different words in "op" sound

Time: 10 mins

Materials: flash cards for teacher; worksheet for students

Procedures:

- Teacher asks students a question. "What is a mop?".
- Teacher tells students that people use "mop" to clean the floor.
- Teacher tells students that there are other words in "op" sound.
- Teacher shows the left-hand side *(e.g. h)* of the flash card to students and asks students to try to pronounce the sound.
- Then, teacher shows the other side *(e.g op)* to students and asks them to read the whole word.
- Teacher finishes all the flash cards.
- Teacher asks students to finish the blank filling task.

op - Teacher's materials

m	**op**
h	**op**
p	**op**
t	**op**
st	**op**

op - Worksheet

c	**o**	**p**	→			
h			→			
m			→			
p			→			
t			→			
s t			→			

6. Onset – rimes (short vowels)

og

(viii) Name of task: A frog on a log

Aims: to recognize words in "og" sound in a poem

Time: 10 mins

Materials: a poem

Procedures:

- Teacher introduces students a poem and teaches students to read the poem.

  *Hey! Hey! Look! What is on the **log**?*
  *A **hog** or a **dog**? Is it a **hog** or is it a **dog**?*
  *We can't see it in thick **fog**.*
  *Wait! Wait! Oh! A **frog** is on the **log**.*

- Teacher asks students to circle all the words in "og" sound.
- Teacher checks the answers with students and practices reding the poem with students.

og - Worksheet

Hey! Hey! Look! What is on the log?
A hog or a dog? Is it a hog or is it a dog?
We can't see it in thick fog.
Wait! Wait! Oh! A frog is on the log.

6. Onset – rimes (short vowels)

am

(ix) Name of task: Sam likes eating ham

Aims: to learn more words in "am" sound

Time: 10 mins

Materials: a short story with humor; worksheet for students

Procedures:

- Teacher tells students that she is going to tell them a short story.
- Teacher asks students to listen very carefully. Teacher reads out the story in class.

Sam likes eating jam. One day, he wanted to ask his mother to buy him a jar of jam but his mother was not in. He wrote a paper slip to his mother but he did not know how to spell "Jam". He wrote "Ham" and his mother bought him several slices of ham. Sam was very unhappy.

- Teacher asks students if they understand the story.
- Teacher disturbs the story to the students and asks them to read the story again.
- Teacher asks students to underline all the words in "am" sound.

am - Worksheet

Sam likes eating jam. One day, he wanted to ask his mother to buy him a jar of jam but his mother was not in. He wrote a paper slip to his mother but he did not know how to spell "Jam". He wrote "Ham" and his mother bought him several slices of ham. Sam was very unhappy.

6. Onset – rimes (short vowels)

ap

(x) Name of task: Who is taking a nap?

Aims: to learn the sound "ap" and learn the meaning of different words in the same sound

Time: 10 mins

Materials: worksheet for students

Procedures:

- Teacher asks students if they know what the meaning of "nap" is.
- Teacher distributes each student a worksheet with pictures on it.
- Teacher tells students that one of the pictures is about a person who is taking a nap.
- Teacher asks students to point out the right picture.
- Teacher asks students to finish the blanks by writing a suitable letter.
- Teacher checks answers with students.

IMAGES REDACTED DUE TO THIRD PARTY RIGHTS OR OTHER LEGAL ISSUES

6. Onset – rimes (short vowels)

ub

(xi) Name of task: A club in the pub

Aims: to recognize words in "ub" sound by reading a poem

Time: 10 mins

Materials: a poem; worksheet for students

Procedures:

- Teacher distributes students a worksheet with a poem on it.
- Teacher reads the poem first and asks students to listen very carefully. Teacher emphasized the words in "ub" sound when reading.

This is a club in the pub. People join the club and give subs. Yesterday, they drank wine with members of the club and watched television in the pub. They saw a cute cub bathing in a tub. It rubbed with a brush.

- Teacher shares the story with students.
- Teacher asks students to underline the words in "ub" sound in the worksheet.

ub - Worksheet

This is a club in the pub. People join the club and give subs. Yesterday, they drank wine with members of the club and watched television in the pub. They saw a cute cub bathing in a tub. It rubbed with a brush.

6. Onset – rimes (short vowels)

ug

(xii) Name of task: Concentration

Aims: to learn the sound of "ug" by playing concentration

Time: 15 mins

Materials: playing cards; worksheets for students

Procedures:

- Teacher divides students into groups of two to three.
- Teacher distributes the playing cards to each group.
- Teacher pre-teaches students the different words in "ug" sound, which are on the playing cards. Students read the words.
- Teacher asks students to turn over the cards.
- Teacher asks students to take turns to open a pair of cards in the group. Student should read the two words after opening the cards. If the two cards match each other, the student wins the pairs. Then, another student plays next.
- Teacher checks with students after they have finished the game.
- Teacher asks students to finish the blank-filling task.

Playing cards

bug	bug
hug	hug
tug	tug
mug	mug
jug	jug
rug	rug
snug	snug

Worksheet

b	**u**	**g**	→				
h			→				
t			→				
m			→				
j			→				
r			→				
sn			→				

6. Onset – rimes (short vowels)

and

(xiii) Name of task: Find the right letter

Aims: to match letter with rime

Time: 10 mins

Materials: letter cards

Procedures:

- Teacher tells students that they are going to learn the sound "and".
- Teacher prepares several letter cards and pastes the cards onto the board, including the initial letters and the sound "and".
- Teacher tells students that only four initial letters match the rime "and"
- Teacher volunteers students to come up to the front and match the cards.
- Teacher tells students the right answers.
- Teacher practices saying the words with students.

Teacher's materials

b	k
c	e
f	l
s	t
h	d

and

and

and

IMAGES REDACTED DUE TO THIRD PARTY RIGHTS OR OTHER LEGAL ISSUES

Worksheet

B ------- ack → Back

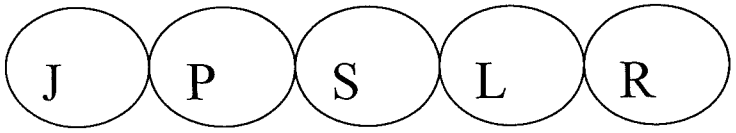
___ ------- ack → _____

___ ------- ack → _____

___ ------- ack → _____

___ ------- ack → _____

___ ------- ack → _____



Appendix 6.7

7. Rimes (Long Vowels)

	Date:	Min:	Remarks
ay – What a good day!			
all – What a the rhyming words			
ock – I am a clock			
ee – I don't like bees			
ing – It's fun to sing			
ear – rhyming words			
ose – What has the clown lost?			
Revision: Long vowels and Short vowels			
(i) Guess the name			
(ii) Rhyming words (1)			
(iii) Rhyming words (2)			
(iv) rime and rhyme			

Teacher: _____

Class: _____

7. Onset – rimes (long vowels)

ay

(i) Name of task: What a good day!

Aims: to recognize the sound "ay" by listening to sentences.

Time: 10 mins

Materials: a poem

Procedures:

- Teacher tells students that she is going to read out several sentences with a word emphasized.

1. The plane flies across the ***bay***.
2. Today is mother's ***day***.
3. Hens ***lay*** eggs.
4. Sunshine produces ultraviolet ***ray***s.
5. Please listen to what the students ***say***.
6. Which is the ***way*** to Kowloon Bay?
7. How much do I need to ***pay***?

- Teacher asks students if they could recognize the emphasized words.
- Teacher repeats saying the sentences if students couldn't listen to her very clearly.
- Teacher asks students to spot the emphasized word sentence by sentence and writes down the word on the board.
- Teacher asks students if the words written on the board have any similarities.
- Teacher practices reading the words with the students.
- Teacher asks students to finish the short written task.

Worksheet

B ------- ay → Bay

------- ay → _____

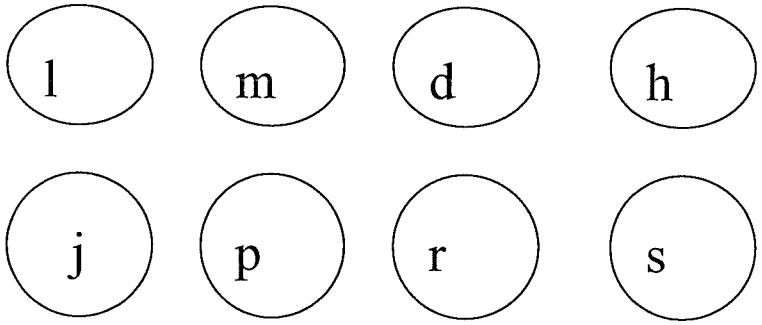
------- ay → _____

------- ay → _____

------- ay → _____

------- ay → _____

------- ay → _____



7. Onset – rimes (long vowels)

all

(ii) Name of task: Where are the rhyming words?

Aims: to identify the "all" sound in words.

Time: 10 mins

Materials: a ball; worksheet for students;

Procedures:

- Teacher shows students a ball and puts it near the wall.
- Teacher asks "Where is the ball?" Then students answer "The ball is near the wall."
- Teacher introduces the rhyme in Worksheet 1. Teacher reads aloud the sentences there.

We ***all*** like to play the ***ball.***
Where is the ***ball***?
The ***ball*** is near the ***wall.***
We are ***tall.***

- Teacher asks students to underline the rimes in the worksheet.
- Teacher checks answers with students. Students read aloud the rhyme several times.
- Students find out and underline the rime "all" in Worksheet 2.

We can read "**ALL**"
We can read "**BALL**"
We can read "**WALL**"
We are "**TALL**".

all - Worksheet 1

We all like to play the ball.

Where is the ball?

The ball is near the wall.

We are tall.

all - Worksheet 2

We can read ALL

We can read BALL

We can read WALL

We are TALL

7. Onset – rimes (long vowels)

ock

(iii) Name of task: I am a clock

Aims: to identify the sound "ock"

Time: 10 mins

Materials: a clock; a song; worksheet for students

Procedure:

- Teacher initiates students' interest by asking "What time is it?. Students answer "It is one o'clock."
- Teacher teaches students to read the word "clock" correctly and introduces the correct sound "ock".
- Teacher asks students to pretend a clock and sing the song for several time:

Hickory, dickory, d***ock***,
The mouse ran up the cl***ock***,
The cl***ock*** struck one,
The mouse ran down,
Hickory, dickory, d***ock***!

- Teacher gives students a worksheet and write down some more words that rhyme with "ock".

ock - Worksheet

Write down the sound "ock" to form new words. Repeat writing the words for 5 times.

bl_ _ _

---

cl_ _ _

---

d_ _ _

---

fl_ _ _

---

l_ _ _

---

r_ _ _

---

s_ _ _

---

7. Onset – rimes (long vowels)

ee

(iv) Name of task: Wee! Wee! I don't like bees

Aims: To enable students to recognize the sound "ee"

Time: 20 mins

Materials: a poem worksheet; paper cut-outs of three angry bees and a big tree.

Procedures:

- Teacher cuts out the three bees and the tree. Paste the three bees onto the tree.
- Teacher asks students: What can you see?
  Students: I can see a bee.
  Teacher: How many bees can you see?
  Students: I can see three bees.
  Teacher: Where are the bees?
  Students: They are in the tree.
  Teacher: Do you like bees?
- Teacher can hold up the bees at the moment.
- Teacher instructs students to read the poem.
- Teacher asks students to circle words that rhyme with "ee"
- Teacher asks students to read the poem aloud.

IMAGES REDACTED DUE TO THIRD PARTY RIGHTS OR OTHER LEGAL ISSUES

7. Onset – rimes (long vowels)

ing

(v) Name of task: It's fun to sing

Aims: to recognise the sound "ing"

Time: 10 mins

Materials: a poem; blackboard

Procedures:

- Teacher asks students if they like to sing a song in class. e.g.Do you like to sing? Who like to sing?
- Teacher gets students to be familiar to the sound "ing". Tell students that they are going to learn the sound "ing".
- Teacher writes the poem on the board and reads the poem together with students.

*It is fun to **sing**.*
*If you **sing** with **Ying**.*
***Ying** can **sing** like anything.*
*I **sing** **Ding**, and **Ying** **sings** **Ling**,*
*We can **sing** everything.*

- Teacher asks students to replace the name "Ying" with other names such as "Ping", "Wing" and "Ting".

7. Onset – rimes (long vowels)

ear

(vi) Name of task:

Aims: to recognise the sound "ear" and form more rhyming words with the same sound.

Time: 15 mins

Materials: letter card; worksheet for students

Procedures:

- Teacher teaches different body parts, including the "ear". For example, the function of the ears is to "hear", and "tear" will come out from our eyes when we "fear" something.
- Teacher tells students that "ear" is a funny word. It can match with different letters to make new words, such as "hear', "tear" and "fear". Teacher sticks different cards on the board to form the words.
- Teacher asks students to try to stick other cards with letter on the board to make new words with "ear". E.g. "bear', "dear", "near" and "pear".
- Teacher asks students to do the worksheet.

h	ear
t	
f	
b	
d	
p	
n	

7. Onset – rimes (long vowels)

ose

(vi) Name of task: What have the clown lost?

Aims: to recognize the "ose" sound

Time: 15 mins

Materials: a picture of clown; other words with "ose" sound in pictures

Procedures:

- Teacher shows a picture of clown to students and asks them what the clown is missing in the face. Teacher sticks the face of the clown on the board.
- Teacher shows three pictures to students, "rose", "hose' and "nose" and asks which item the missing part of the clown is. Teacher teaches students to read the words at the same time.
- Teacher asks students to stick the missing part onto the face.
- Teacher reads the words with students.

IMAGES REDACTED DUE TO THIRD PARTY RIGHTS OR OTHER LEGAL ISSUES

IMAGES REDACTED DUE TO THIRD PARTY RIGHTS OR OTHER LEGAL ISSUES

IMAGES REDACTED DUE TO THIRD PARTY RIGHTS OR OTHER LEGAL ISSUES

(ii) Name of task: Rhyming Words (1)

Aims: To enable students to recognize the letter pattern which forms the rhyming words; think of other rhyming words.

Time: 20 mins

Materials: worksheets for students

Procedures:

- Teacher shows examples to students of how they could do the worksheets
- Teacher illustrates the letter pattern of each rhyming pairs. E.g. the letter pattern of "pan" and "van" should be "an"
- Teacher tells students another word which rhymes with the pairs. E.g. "fan", "ban" and so on.
- Teacher asks students to finish the worksheets

Worksheet

Rhyming Words (1)

		Rhyming Word	Letter Pattern
Pan	**Van**	**Fan**	**an**
Bat	**Fat**		
Bin	**Fin**		
Bit	**Fit**		
Ben	**Hen**		
Bet	**Get**		
Cop	**Hop**		
Fog	**Log**		
Dam	**Ham**		
Gap	**Map**		
Pub	**Tub**		
Bug	**Tug**		
Band	**Land**		
Back	**Sack**		
Bay	**Lay**		

(iii) Name of task: Rhyming Words (2)

Aims: To enable students to recognize the letter pattern which forms the rhyming words; think of other rhyming words.

Time: 15 mins

Materials: worksheets for students

Procedures:

- Teacher shows examples to students of how they could do the worksheets.
- Teacher illustrates the letter pattern of each rhyming pairs. E.g. the letter pattern of "Bear" and "Fear" should be "ear".
- Teacher tells students another word which rhymes with the pairs. E.g. "Near", "Tear" and so on.
- Teacher asks students to finish the worksheets.

Rhyming Word (2)

		Rhyming Word	Letter Pattern
Bear	**Fear**	**Near**	**ear**
Bee	**Fee**		
Dose	**Rose**		
Ball	**Fall**		
Cock	**Dock**		
Ring	**Sing**		

(iv) Name of Task: Rime and Rhyme

Aims: to learn that rhyming words look the same as well as sound the same.

Time: 20 mins

Materials: a picture for illustration; a text (teacher's version and student's version)

Procedure:

- Go over with students what rhyme is. Teacher can read two words, e.g. **bat** and **cat**, and show that the two words rhyme in sound.
- Teacher asks students to give another word which rhymes with the pairs.
- Teacher points to the pictures (see Teacher's materials) and says the words with the students, without referring with the written words at this stage. Make sure that students know that they rhyme.
- Teacher points to another side and draws attention to the words printed there. Ask students if they can see any letters appeared in each word. Teacher can highlight the letters in each word.
- Teacher uses the selected text (teacher's version). Make sure that students have copies of the text (student's version). Teacher explains to students that the text she is going to read has a lot of rhyming words in.
- Teacher reads the text aloud and asks students to pay attention to any words which rhyme.
- Teacher asks students to underline the rhyming words when teacher is reading the text.

IMAGES REDACTED DUE TO THIRD PARTY RIGHTS OR OTHER LEGAL ISSUES

Selected Text (Teacher's Version)

One day, the cat is on the **mat**. It's a **fat cat**. There is a **rat**. It's very hungry. It runs everywhere to look for food. Oh! What can it see? It can see a fish. It can smell a fish. It can touch a fish. Can it taste a fish? No, no, no.....
Look at the **cat**. It can hear the **rat**. It can see the **rat**. It puts a **hat** on the **rat** and kills the **rat** with a **bat**.

Selected Text (Student's Version)

One day, the cat is on the mat. It's a fat cat. There is a rat. It's very hungry. It runs everywhere to look for food. Oh! What can it see? It can see a fish. It can smell a fish. It can touch a fish. Can it taste a fish? No, no, no.....
Look at the cat. It can hear the rat. It can see the rat. It puts a hat on the rat and kills the rat with a bat.